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SITE INSPECTION (SI) REPORT

TOLEDO TIE TREATMENT SITE

Toledo, Lucas County, Ohio
U.S. EPA ID: OHD987049202

Prepared by:

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September 7, 1993

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U.S. EPA ID: OHD987049202
September 3, 1993

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1.0 EXECUTIVE SUMMARY

Ohio Environmental Protection Agency (OEPA) personnel conducted a Site Inspection (SI) at the Toledo Tie Treatment Site (Lucas County, Ohio) March 17-18, 1993. The purpose of this SI was to determine if creosoting operations at this former railroad tie treating facility have released contaminants into the environment, specifically to soils and the adjacent Williams Ditch.

Work conducted during the SI included collection of two surface water and two sediment samples from Williams Ditch and five on-site soil samples. One background and one duplicate sample were collected for each medium. No air or ground water samples were collected.

Significant findings from this investigation include high concentrations of polycyclic aromatic hydrocarbons (PAHs) and other coal tar constituents in on-site soils and Williams Ditch sediment. Naphthalene concentrations in soil were detected at levels as high as 3,700 ppm.

2.0 INTRODUCTION

The Ohio Environmental Protection Agency (OEPA) Division of Emergency and Remedial Response (DERR) formed a cooperative agreement with the United States Environmental Protection Agency (U.S. EPA) Region 5 to conduct a Site Inspection (SI) of the Toledo Tie Treatment Site (Toledo Tie), U.S. EPA ID# OHD987049202. This report was prepared to address potential effects the site may have on surrounding areas.

2.1 Project Background

Toledo Tie was discovered as a potential National Priorities List (NPL) site when the Ohio EPA and the Maumee River Remedial Action Plan Advisory Committee investigated all potential sources contributing to the water quality degradation of the Maumee River Basin, including the Ottawa River. A series of property assessments performed on different parcels of land formerly owned by the American Creosoting Company (now the Toledo Tie site), and subsequently the City of Toledo, revealed creosote-contaminated soils.

On January 28, 1993, OEPA personnel conducted a site reconnaissance at Toledo Tie. Based on file reviews and site conditions, a Site Inspection workplan was prepared and approved by U.S. EPA. On March 17-18, 1993, OEPA staff performed a Site Inspection, collecting on-site soil samples, and surface water and sediment samples from an adjacent ditch.

2.2 Purpose

The purpose of this SI report is to describe the current environmental threat posed by previous operations at American Creosoting. The data and information generated from the investigation will be used to refine the Hazard Ranking System score, and identify additional data requirements needed to perform an Expanded Site Inspection (ESI) if necessary.

3.0 SITE BACKGROUND

3.1 Site Description

The Toledo Tie Treatment Site is an approximately 21 acre area located at Arco Industrial Park in Toledo, Ohio (Latitude: 413809, Longitude: 833652). The site is bordered on the north and west by industrial and commercial property, on the east by the Toledo Terminal Railroad, and on the south by Conrail (Figure 1). Williams Ditch runs adjacent to the property on the west and north perimeters.

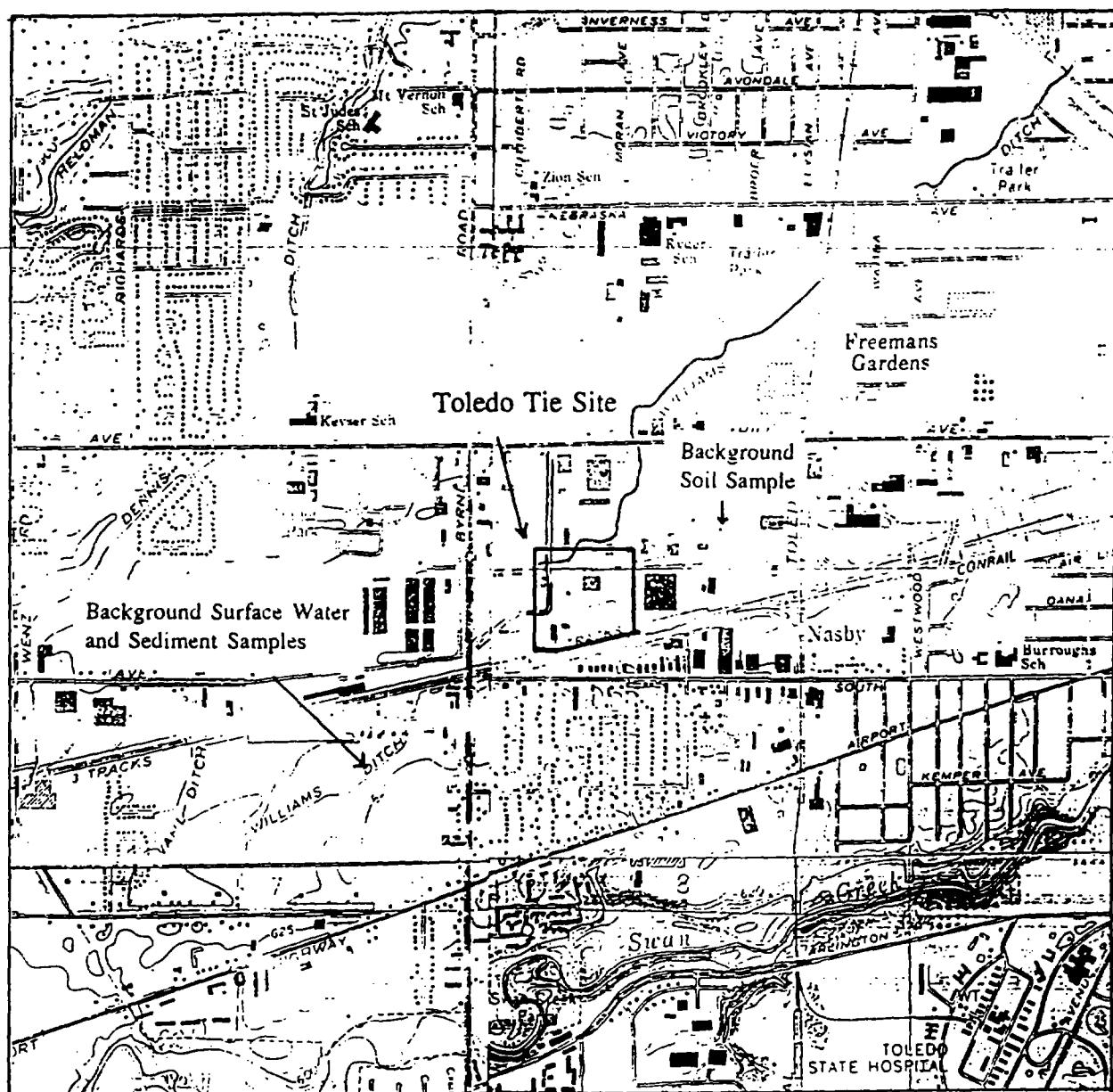


Figure 1
Topographic Map of Site Location
and Background Sampling Locations
(1 inch equals 2,000 feet)



Lucas County

Currently, the site consists of approximately six parcels of land located on the corner of Arco Drive and Frenchman's Road in the Arco Industrial Park (Figure 2). Based on OEPA files and aerial photos, the properties addressed in this investigation included Lots 8 & 9 (LBA Custom Printing), Lot 25 (Greg Archambau, owner), Lot 26 (M. P. Wilkins, Owner), Lots 27 & 28 (Ohio Lottery building; Robert & Donna Smith, owners), Lot 29 (Spartan Chemical building; David Kuniansky, owner) and Lot 30 (City Parks & Forestry Department; City of Toledo, Owner). Other properties formerly part of the American Creosoting Company have been developed with buildings and parking lots.

3.2 Site History

The investigated areas were used by the American Creosoting Company and the New York Central Railroad for railroad tie treatment operations, including creosote-treating, drip-drying and storing railroad ties. The site originally encompassed over 50 acres, most of which was owned by the Federal Creosoting Company from 1923 to 1959 when the corporation was transferred to the American Creosoting Company. Operations continued until 1962 when the property was sold to the City of Toledo. The property, apparently unused by the city, was purchased by Arco, Incorporated in 1969 to develop Arco Industrial Park.

Ohio Department of Transportation aerial photographs show the changes in land use that occurred from 1962 to 1990 (Figures 3 & 4). A 1944 New York Central Railroad map identifies the original creosoting facility consisting of several buildings and above ground tanks (Figure 5). OEPA files indicate there were two 500,000 gallon, three 30,000 gallon, and four 150,000 gallon creosote tanks and one 150,000 gallon zinc chloride tank. Additionally, 5-10 acres of the site (east of tanks) was used for drying and stacking creosote-treated railroad ties.

A series of property assessments have revealed soil contamination over a large portion of the study area. The following contracted activities have taken place at various properties comprising the site:

In May, 1987, Bowser-Morner, contractor for Doral Steel, conducted a foundation soil exploration of the property located at 315 Arco Drive; chemical odors were noted in the soil from depths of 4-9 feet. In November, 1988, Bowser-Morner collected samples from a single boring location at this property. Laboratory results indicated that a sufficient ratio of phenanthrene and carbazole concentrations were present in on-site soils to determine there was creosote contamination.

In February, 1989, Environmental Consultants, Inc. performed an Environmental Site Assessment of the property known as LBA Custom Printing at 207 Arco Drive (Lots 8 & 9). Of three test borings drilled, one groundwater sample was collected and submitted for analysis. The sample was found to contain 29 ppb benzo(ghi)perylene.

Toledo Tie Treatment Site Site Map

Hill Avenue

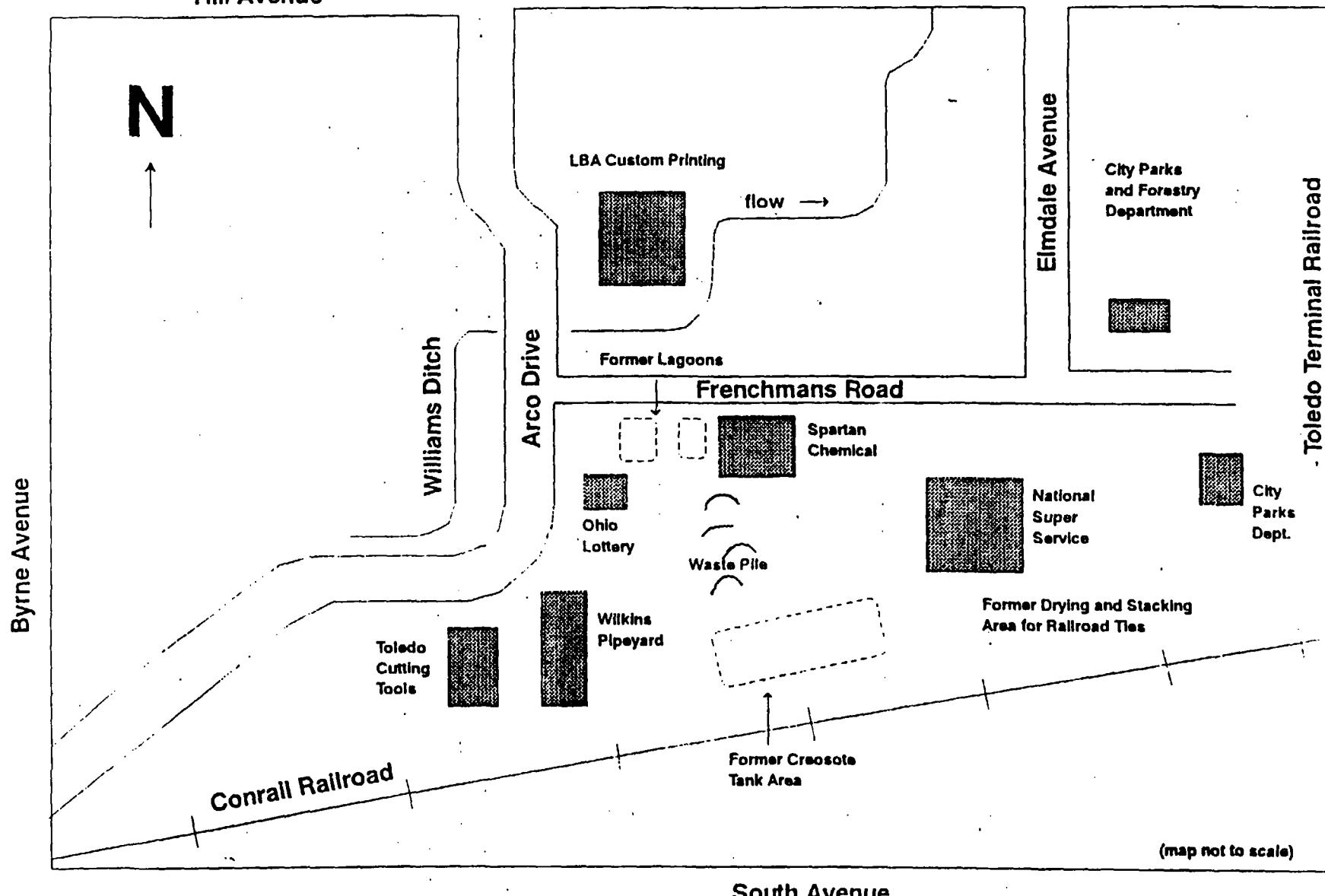


Figure 2 Site Features Map

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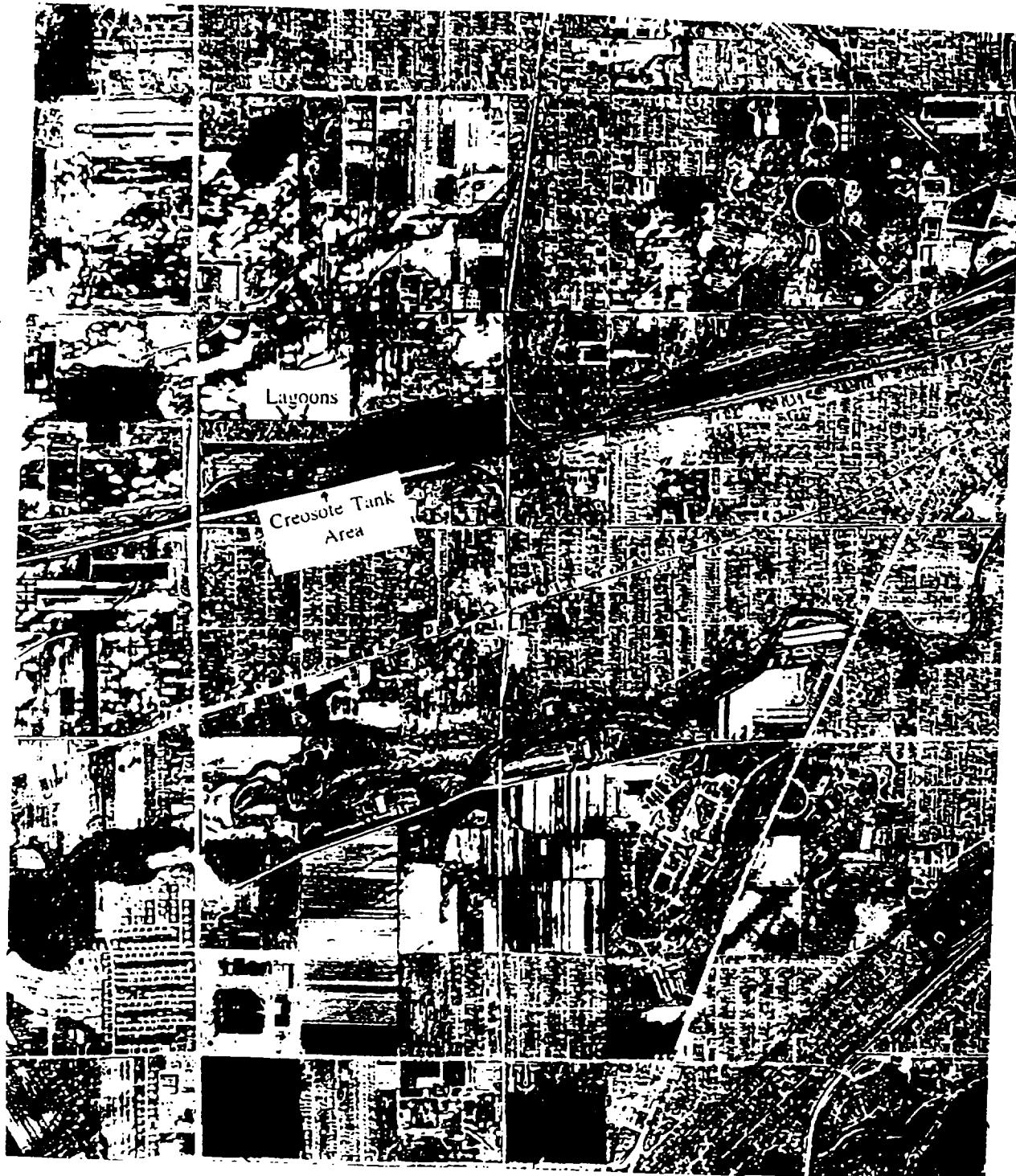


Figure 3
1962 Aerial Photograph of Site

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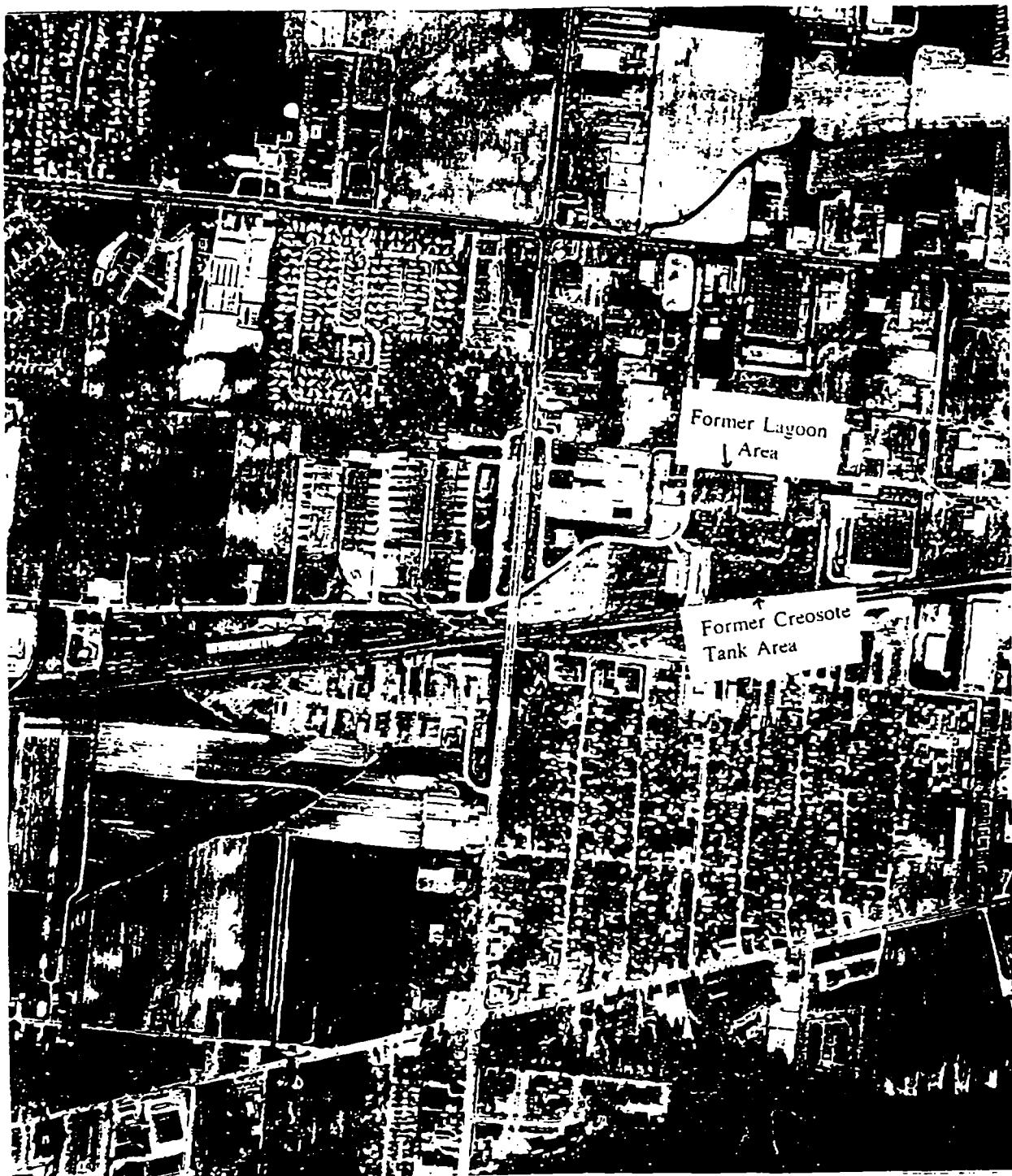


Figure 4
1990 Aerial Photograph of Site

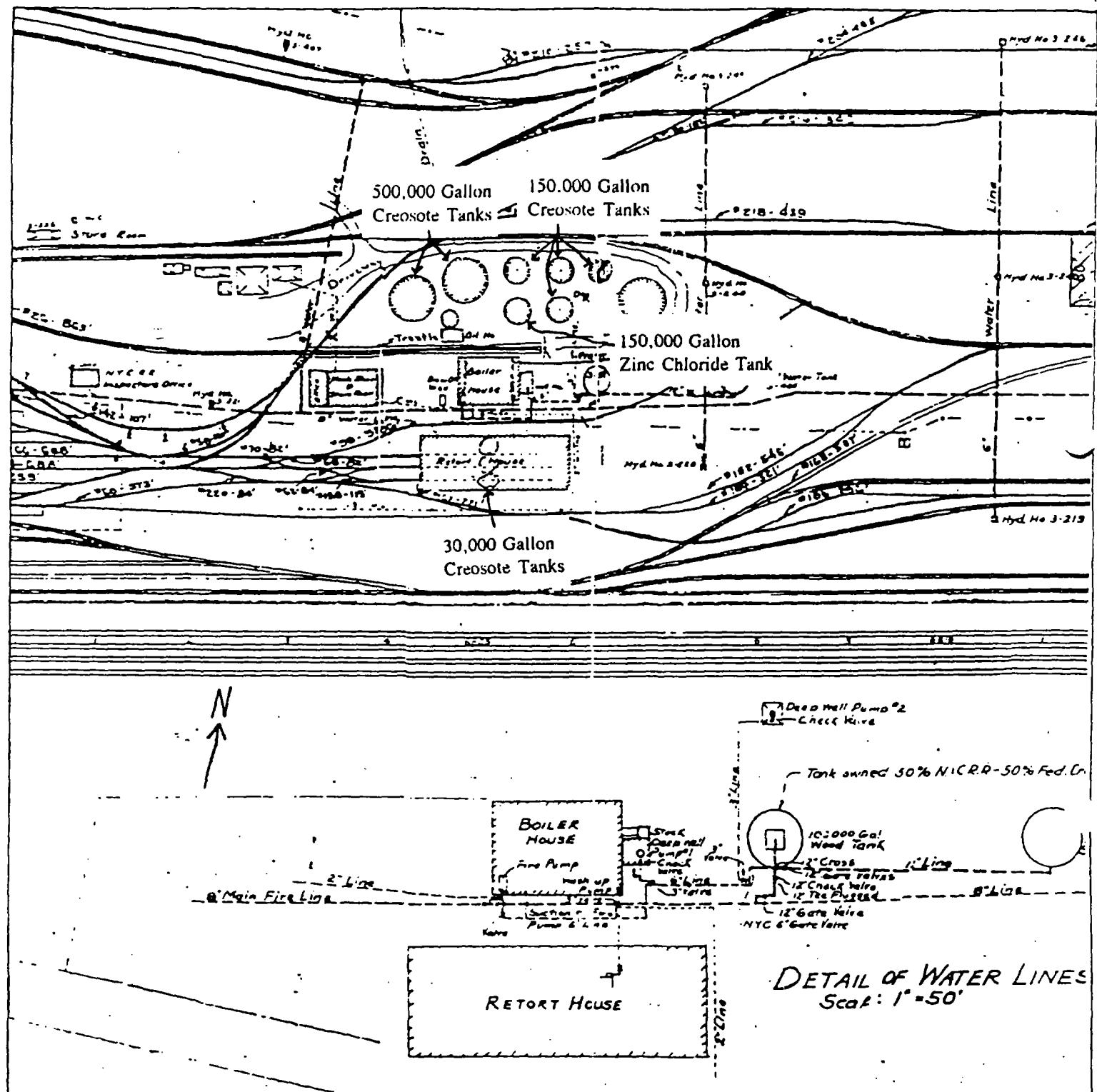


Figure 5
Site Features Map (produced by New York Central Railroad, 1944)

In May, 1989, Environmental Consultants, Inc. performed an environmental site assessment of the former Cook United Warehouse Property (now National Super Service) at 3115 Frenchmans Road. Analyses of semi-volatile organic compounds was not requested.

In April, 1990, Midwest Environmental Consultants performed an investigation and Risk Assessment of the property at 367 Arco Drive (Lot 25). One soil sample contained 200 ppm phenanthrene, and groundwater contained arsenic and chromium at concentrations above MCLs for drinking water.

In October, 1990, Geraghty & Miller, Inc. performed an investigation of a soil pile located at the Spartan Chemical Company at 3243 Frenchman's Road. Chemical analyses of a soil sample collected from the waste pile indicated PAH contamination.

3.3 Site Geology & Hydrology

Toledo Tie is located in an area where the glacial drift is approximately 80 feet thick, and is composed of clayey materials with occasional seams of sand and gravel. Carbonate bedrock is found at approximately 110-125 feet below ground surface. This confined aquifer consists of hard, dolomitic, porous limestone, and generally flows northeasterly toward Lake Erie. Groundwater is encountered as shallow as three feet.

The soils in this area consist of loamy udorthents of the Bixler-Dixboro series. These areas are nearly level to gently sloping and are somewhat poorly drained. This type of soil is usually formed in loamy and sandy glacial lake sediment. Loamy udorthent soils generally consist of mixed organic and inorganic material overlain by a loamy soil material. Some areas consist of sandy and clayey soil material and may be filled with various building materials.

The Toledo Tie site lies in an area of Toledo that has been cut and filled for urban development. According to soil boring logs and aerial photos, cut and fill activities occurred, most likely during development of the industrial park.

4.0 SAMPLING LOCATIONS & PROCEDURES

Surface water, sediment and soil samples were collected from select locations at the Toledo Tie Treatment site on March 17-18, 1993 (Figure 6). Standard Quality Assurance and Quality Control (QA/QC) procedures for SI field activities were followed during the investigation. These procedures, including sample collection, packaging and shipping, and equipment decontamination, are documented in the Quality Assurance Project Plan (QAPP) for Region 5 Superfund Site Inspection Activities for Ohio EPA and Ohio EPA Field Standard Operating Procedures. A photographic log of sampling locations can be found in Appendix B.

Toledo Tie Treatment Site

CLP Sampling Locations

Hill Avenue

- ⊗ Soil Sample
- ⊗ Sediment Sample
- △ Surface Water Sample
- (map not to scale)



Byrne Avenue

Williams Ditch

Sed: ETL39, MESY39
ETL40, MESY40 (dup)
SW: ETL44, MESY44
ETL45, MESY45 (dup)

Toledo
Cutting
Tools

Conrail Railroad

LBA Custom Printing

flow →

Sed: ETL38, MESY38
SW: ETL43, MESY43
ETL32, MESY32
ETL33, MESY33 (dup)

Former Lagoons

Frenchmans Road

Ohio
Lottery

Wilkins
Plyyard

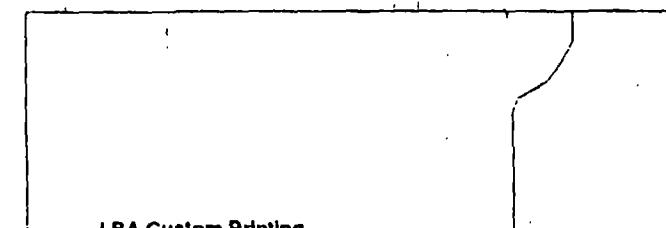
ETL29, MESY29
ETL31, MESY31
ETL28, MESY28

Waste Pile

Former Creosote
Tank Area

South Avenue

Figure 6 Ohio EPA Sampling Locations



Elmdale Avenue

City Parks
and Forestry
Department

ETL34, MESY34
Background Soil

City
Parks
Dept.

ETL30, MESY30

National
Super
Service

Former Drying and Stacking
Area for Railroad Ties

Toledo Terminal Railroad



4.1 Surface Water Sample Locations

Surface water samples from Williams Ditch were collected to determine if contaminants were migrating off-site. Two surface water samples were collected from the Ditch adjacent to the site. Samples ETL44 and ETL45 (duplicate) were collected near the westernmost perimeter of the site, and sample ETL43 was collected near the site of the former creosote lagoons.

A background surface water sample (ETL46) was collected in the ditch approximately 2500 feet upstream (S.W.) of the site. A trip blank (ETL51) was sent with the samples to monitor possible VOC contamination from transport and storage of sample containers and during sampling activities. Surface water samples were collected using bottle immersion procedures.

4.2 Sediment Sample Locations

Sediment samples from Williams Ditch were collected to demonstrate contaminant migration from the site. Sediment sampling locations ETL39 and ETL38 correspond to surface water sampling locations ETL44 and ETL43 respectively.

The background sediment sample (ETL41), taken in proximity to surface water sample ETL46, was collected upstream of the site in an area that was not influenced by site contamination. A duplicate sample (ETL40) was collected of sample ETL39. Sediment samples were collected using stainless steel scoops.

4.3 Soil Sample Locations

Five soil samples were collected to characterize site contamination. This information was used to determine the potential for direct exposure of contaminants to on-site workers and to establish the migration of contaminants from surface and subsurface soils to the nearby ditch. All soil samples were chosen based on the appearance of soils and photoionization detector readings, and were collected using stainless steel bucket augers and spoons.

With the exception of one sample, all soil samples (ETL29 through ETL32) were collected from 1 1/2 to 5 1/2 foot depths. Sample ETL28 was collected one foot deep in an on-site waste pile located near the southwest corner of Spartan Chemical. Sample ETL31 was collected approximately 25 feet south of the southeast corner of Spartan Chemical. Several attempts were made to hand auger closer to the railroad tracks (south of the waste pile), but the material beneath the surface in this former creosote tank area was too solid.

Sample ETL29 was collected at the site of the former creosote lagoons, approximately 15 feet south of Frenchmans Road and west of the northwest corner of Spartan Chemical. Samples ETL32 and ETL33 (duplicate) were collected approximately 45 feet north of sample ETL29, across Frenchmans Road. This sample location was less than ten feet from Williams Ditch, and, like sample ETL29, was saturated with an oily substance.

Sample ETL30 was collected at the City Parks & Forestry Department, 50 yards east of National Super Service and 35 yards north of the railroad tracks. This sample was collected to determine if contamination from the site had extended beyond the former tank area, and to locate potential residues from the railroad tie drying area.

The background sample (ETL34) was collected from soils similar to those at the site, but not influenced by previous site operations. Previous soil sampling was performed at Lots 8 and 25 by private contractors; therefore, OEPA personnel did not collect samples at these locations.

5.0 DISCUSSION OF ANALYTICAL RESULTS

Surface water, sediment and soil samples were analyzed by U.S. EPA Contract Laboratory Program laboratories. Analyses included the following parameters: volatile organic compounds, semi-volatile organic compounds, pesticides, PCBs, TAL metals and cyanide.

Complete analytical results of this investigation are contained in Appendix A. Significant findings based on these data are summarized in Tables 1 through 3. Data were reviewed by U.S. EPA Region 5 personnel for compliance with the Contract Laboratory Program, and validated by Region 5 Central Regional Laboratory staff.

5.1 Surface Water Samples

Sample ETL43, collected from Williams Ditch near the site of two former creosote lagoons, contained low concentrations of volatile organic compounds (VOCs) and endosulfan I. Lead and zinc were detected in this sample at levels three times that found in background sample ETL46. Analyses of sample ETL44 (and duplicate sample ETL45), collected approximately 900 feet upstream of sample ETL43, indicated no compounds were present above detection limits.

NOTE: In August of 1992, Ohio EPA personnel sampled surface water in Williams Ditch adjacent to the site. Benzene, cis-1,2-dichloroethene, ethylbenzene, tetrachloroethene, toluene, vinyl chloride and xylenes were detected in one sample. Additionally, many PAH compounds were present at concentrations as high as 7.8 ppb.

5.2 Sediment Samples

Sample ETL38, corresponding to surface water sample location ETL43, contained high concentrations of PAHs ranging from 180 ppm chrysene to 720 ppm fluoranthene. Sample ETL39 and sample ETL40 (duplicate), corresponding to surface water sample location ETL44, contained elevated concentrations of PAHs ranging from 3J ppm benzo(a)pyrene to 11J ppm fluoranthene. When collecting samples ETL38, ETL39 and ETL40, OEPA personnel observed that at least one foot of creosote composed the top layer of the ditch sediment. Upon disturbing the sediment, an oily sheen appeared ontop of the water. Analysis of the samples indicated gross creosote contamination was present in Williams Ditch adjacent to the Toledo Tie site.

Table 1
Surface Water Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL43 MESY43	ETL44 MESY44	ETL45 MESY45	ETL46 MESY46	ETL51
DATE SAMPLE COLLECTED	3/17/93	3/17/93	3/17/93	3/17/93	3/17/93
TIME SAMPLE COLLECTED	935	1200	1200	1510	800
SAMPLE DEPTH					
QA/QC DESCRIPTION (if applicable)	MS/MSD		Dup of ETL44	Background	Tsp Blank

COMPOUND DETECTED (ug/l)						
VOLATILE ORGANIC COMPOUNDS						
benzene	10 ug/l	6J	10U	10U	10U	10U
tetrachloroethene	10 ug/l	2J	10U	10U	10U	10U
toluene	10 ug/l	6J	10U	10U	10U	10U
xylenes (total)	10 ug/l	4J	10U	10U	10U	10U
ANALYTE DETECTED (ug/l)						
INORGANIC METALS/CYANIDE						
lead	0.6 ug/l	20.3	4	3.9	3.6	N/A
zinc	4 ug/l	93	31.4	29.1	13.9B	N/A

Table 2
Sediment Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL41 MESY41			ETL38 MESY38	ETL39 MESY39	ETL40 MESY40
DATE SAMPLE COLLECTED	3/17/93			3/17/93	3/17/93	3/17/93
TIME SAMPLE COLLECTED	1500			1030	1225	1225
SAMPLE DEPTH	0"-4"			0"-4"	0"-4"	0"-4"
QA/QC DESCRIPTION (if applicable)	Background			MS/MSD		Dup of ETL39

COMPOUND DETECTED (ug/kg)						
SEMI-VOLATILE ORGANIC COMPOUND	CRQL		CRQL			
naphthalene	330 ug/kg	480U	10000 ug/kg	69000J	24000U	23000U
2-methylnaphthalene	330 ug/kg	480U	10000 ug/kg	4000J	24000U	23000U
acenaphthene	330 ug/kg	480U	10000 ug/kg	85000J	24000U	23000U
fluorene	330 ug/kg	480U	10000 ug/kg	130000J	24000U	23000U
phenanthrene	330 ug/kg	71J	10000 ug/kg	600000	4000J	4000J
anthracene	330 ug/kg	480U	10000 ug/kg	51000J	24000U	23000U
fluoranthene	330 ug/kg	190J	10000 ug/kg	720000	11000J	11000J
pyrene	330 ug/kg	170J	10000 ug/kg	500000	11000J	9500J
benzo(a)anthracene	330 ug/kg	92J	10000 ug/kg	160000J	4000J	3500J
chrysene	330 ug/kg	110J	10000 ug/kg	180000	4100J	4600J
benzo(a)pyrene	330 ug/kg	84J	10000 ug/kg	110000J	3000J	3000J
indeno(1,2,3-cd)pyrene	330 ug/kg	480U	10000 ug/kg	27000J	24000U	23000U
benzo(g,h,i)perylene	330 ug/kg	480U	10000 ug/kg	25000J	24000U	23000U

PESTICIDES/PCBs	CRQL					
alpha-BHC	1.7 ug/kg	2.4U		0.88JP	1.3JP	3.9U
beta-BHC	1.7 ug/kg	2.4U		5.9JP	1.6JP	3.9U
delta-BHC	1.7 ug/kg	1.7JP		9.4U	0.76JP	11P
heptachlor	1.7 ug/kg	0.17JP		9.4U	4U	3.9U
aldrin	1.7 ug/kg	0.72JP		10P	4.6P	4.1P
dieldrin	3.3 ug/kg	8.3		92P	25P	25P
4,4-DDE	3.3 ug/kg	140CD		290P	260D	190PCE
Endrin	3.3 ug/kg	3.5JP		18U	8.1P	8.9P
4,4-DDD	3.3 ug/kg	93CD		18U	310PD	270PEC
Endosulfan sulfate	3.3 ug/kg	0.91JP		18U	7.8U	7.6U
4,4-DDT	3.3 ug/kg	130CD		120P	83	94
endrin aldehyde	3.3 ug/kg	5.9P		220P	27P	21P
alpha-chlordane	1.7 ug/kg	4.5P		11P	19JD	13P
gamma-chlordane	1.7 ug/kg	6JPD		9.4U	46D	12

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Table 2

Sediment Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL41 MESY41			ETL38 MESY38	ETL39 MESY39	ETL40 MESY40
DATE SAMPLE COLLECTED	3/17/93			3/17/93	3/17/93	3/17/93
TIME SAMPLE COLLECTED	1500			1030	1225	1225
SAMPLE DEPTH	0"-4"			0"-4"	0"-4"	0"-4"
QA/QC DESCRIPTION (if applicable)	Background			MS/MSD		Dup of ETL39

ANALYTE DETECTED (mg/kg)	CRDL					
TAL METALS/CYANIDE						
aluminum	40 mg/kg	2710		18400	8450	8530
antimony	12 mg/kg	4.9U		20.6U	9.3U	6.8U
arsenic	2 mg/kg	2.1B		19.3	29.9	15.9
barium	40 mg/kg	25B		264	143	152
beryllium	1 mg/kg	0.17B		1B	0.61B	0.52B
cadmium	1 mg/kg	1U		4.4U	3.1	2.9
calcium	1000 mg/kg	3110		85600	60100	61400
chromium	2 mg/kg	5.3		51.5	23.9	26.2
cobalt	10 mg/kg	1.6B		27.2B	5.1B	6B
copper	5 mg/kg	6.7		90.3	69.3	70.7
iron	20 mg/kg	4120		31600	18200	18000
lead	0.6 mg/kg	7.6		149	185	210
magnesium	1000 mg/kg	1170B		27400	25100	25500
manganese	3 mg/kg	71.6		1550	453	464
mercury	0.1 mg/kg	0.05U		0.22U	0.09U	0.08U
nickel	8 mg/kg	4U		33B	17.9B	12.8B
potassium	1000 mg/kg	174U		1400B	587B	617B
selenium	1 mg/kg	0.3U		1.8BM	0.9B	0.84B
silver	2 mg/kg	0.86U		3.6U	1.6U	1.2U
sodium	1000 mg/kg	36.3B		1650B	5880	5870
thallium	2 mg/kg	0.37U		1.5U	0.63U	0.68U
vanadium	10 mg/kg	8.8B		48.2B	22.7	23.1
zinc	4 mg/kg	21.4		701	410	420
cyanide	2 mg/kg	0.68U		2.7U	1.2U	1.2U

Table 3
Soil Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL28 MESY28	ETL30 MESY30	ETL31 MESY31	ETL34 MESY34			ETL29 MESY29	ETL32 MESY32	ETL33 MESY33
DATE SAMPLE COLLECTED	3/17/93	3/18/93	3/18/93	3/18/93			3/17/93	3/18/93	3/18/93
TIME SAMPLE COLLECTED	1701	1130	1115	415			1830	1200	1200
SAMPLE DEPTH	1'	4.5'-5.5'	1.5'-2.5'	4.5'-5.5'			2'-3'	4'-5'	4'-5'
QA/QC DESCRIPTION (if applicable)	MS/MSD			Background					Dup of ETL32

COMPOUND DETECTED (ug/kg)	LOW					MED				
	VOLATILE ORGANIC COMPOUNDS	CRQL				CRQL				
2-butanone	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	10000D	2200	7200D	
benzene	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	2400	430J	1000J	
toluene	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	18000	3500	12000	
ethyl benzene	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	2800	11000	
styrene	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	10000	1800	7400	
xylenes (total)	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	74000E	20000	93000E	
<hr/>										
SEMI-VOLATILE ORGANIC COMPOUNDS										
naphthalene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	3700000D	2300000D	2500000D	
2-methylnaphthalene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	550000E	70000D	760000D	
acenaphthylene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	100000	140000	130000	
acenaphthene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	370000E	720000D	710000D	
dibenzofuran	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	330000E	560000D	570000D	
fluorene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	440000E	790000D	770000D	
phenanthrene	330 ug/kg	6800J	450U	430U	390U	10000 ug/kg	1400000D	2000000D	2000000D	
anthracene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	310000	250000	200000	
carbazole	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	150000	120000	110000	
fluoranthene	330 ug/kg	45000	450U	89J	390U	10000 ug/kg	480000E	1300000D	1300000D	
pyrene	330 ug/kg	46000	450U	66J	390U	10000 ug/kg	300000	870000D	840000D	
benzo(a)anthracene	330 ug/kg	28000	450U	55J	390U	10000 ug/kg	160000	300000	270000	
chrysene	330 ug/kg	26000	450U	76J	390U	10000 ug/kg	140000	240000	210000	
benzo(b)fluoranthene	330 ug/kg	79000	450U	210J	390U	10000 ug/kg	170000	340000E	300000	
benzo(a)pyrene	330 ug/kg	30000	450U	430U	390U	10000 ug/kg	75000	150000	140000	
indeno(1,2,3-cd)pyrene	330 ug/kg	19000J	450U	430U	390U	10000 ug/kg	39000J	90000	86000	
dibenzo(a,h)anthracene	330 ug/kg	8700J	450U	430U	390U	10000 ug/kg	20000J	50000	44000	
benzo(g,h,i)perylene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	40000U	18000J	18000J	

Table 3
Soil Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL28 MESY28	ETL30 MESY30	ETL31 MESY31	ETL34 MESY34			ETL29 MESY29	ETL32 MESY32	ETL33 MESY33
DATE SAMPLE COLLECTED	3/17/93	3/18/93	3/18/93	3/18/93			3/17/93	3/18/93	3/18/93
TIME SAMPLE COLLECTED	1701	1130	1115	415			1830	1200	1200
SAMPLE DEPTH	1'	4.5'-5.5'	1.5'-2.5'	4.5'-5.5'			2'-3'	4'-5'	4'-5'
QA/QC DESCRIPTION (if applicable)	MS/MSD			Background					Dup of ETL32

COMPOUND DETECTED (ug/kg)										
PESTICIDES/PCBs	CRQL									
endosulfan 1	1.7 ug/kg	560DP	2.3U	1.1JP	2.0U			210DP	1700D	1200D
4,4-DDE	3.3 ug/kg	42U	4.5U	0.73JP	3.9U			40U	360	290
4,4-DDD	3.3 ug/kg	48P	4.5U	2.3J	3.9U			40U	41U	42U
4,4-DDT	3.3 ug/kg	50P	4.5U	3.8J	3.9U			40U	41U	42U
endrin ketone	3.3 ug/kg	110P	4.5U	4.3U	3.9U			160P	440DP	130P
gamma-chlordane	1.7 ug/kg	14J	2.3U	2.2U	2.0U			21U	21U	22U

ANALYTE DETECTED (mg/kg)										
TCL METALS/CYANIDE	CRDL									
arsenic	2 mg/kg	11.1	0.67B	3.6	2.2B			1.9B	5.1	6.4
beryllium	1 mg/kg	0.85B	0.27B	0.26U	0.28B			0.25U	0.39B	0.56B
copper	5 mg/kg	29.1	3.6B	4.1B	8.6			5.9B	14.7	20.5
lead	0.6 mg/kg	190	4.5	9	5.2			3.8	11.4	12.1
magnesium	1000 mg/kg	10300	630B	514B	1120B			802B	10900	13000
zinc	4 mg/kg	123	13.4	20.2	24.4			17.3	93.5	94.3

Note: TCL Compound and TAL Analyte qualifiers can be found in Appendix A.

Sediment samples in the ditch adjacent to the site contained several metals and pesticide compounds with concentrations that exceeded three times the concentrations of background sediment sample ETL41. With respect to these compounds, either the sediments have been impacted by site run-off, or the samples are of difference sediment types.

5.3 Soil Samples

Samples ETL29, ETL32 and ETL33 (duplicate), collected from the former creosote lagoon areas, contained benzene, toluene, ethylbenzene and xylene (BTEX) and very high concentrations of 18 PAH compounds ranging from 44 to 3,700 ppm. These samples, collected from two to five foot depths, were saturated with an oily, tar-smelling substance.

Sample ETL28 taken from a waste pile and sample ETL31 taken from soil near the waste pile also contained PAHs ranging from 55J ppb to 79 ppm. Pesticides were detected in all samples except ETL30, and arsenic, beryllium, copper, lead and zinc were detected in sample ETL28 at levels exceeding three times the concentrations of background soil sample ETL34.

6.0 MIGRATION PATHWAYS

6.1 Surface Water Pathway

The Toledo Tie Site borders Williams Ditch which flows approximately 2.5 miles before reaching the Ottawa River (RM 10). No containment system to prevent overland flow of contaminants into the ditch was observed during the OEPA investigation. Most residences and facilities in the area use city of Toledo water, which is pumped from Lake Erie via the Toledo intake located greater than 15 miles downstream of the site.

Although the surface water samples appeared oily, the samples contained only low concentrations of benzene, trichloroethene, toluene and xylene (estimated concentrations reported). The PAH compounds found in the sediment samples generally are not soluble in water.

Contaminant migration from the site to Williams Ditch has been documented through visual observation and sample analysis. Coal tar constituents have been detected in on-site soils and in Williams Ditch sediment; therefore, contaminant attribution is clearly evident.

Few sensitive environments exist within a 15 mile radius downstream of the site in Williams Ditch and the Ottawa River (Figure 7). The Erie State Game Area in Michigan is located 13 miles downstream of the site at the mouth of the Ottawa River in North Maumee Bay.

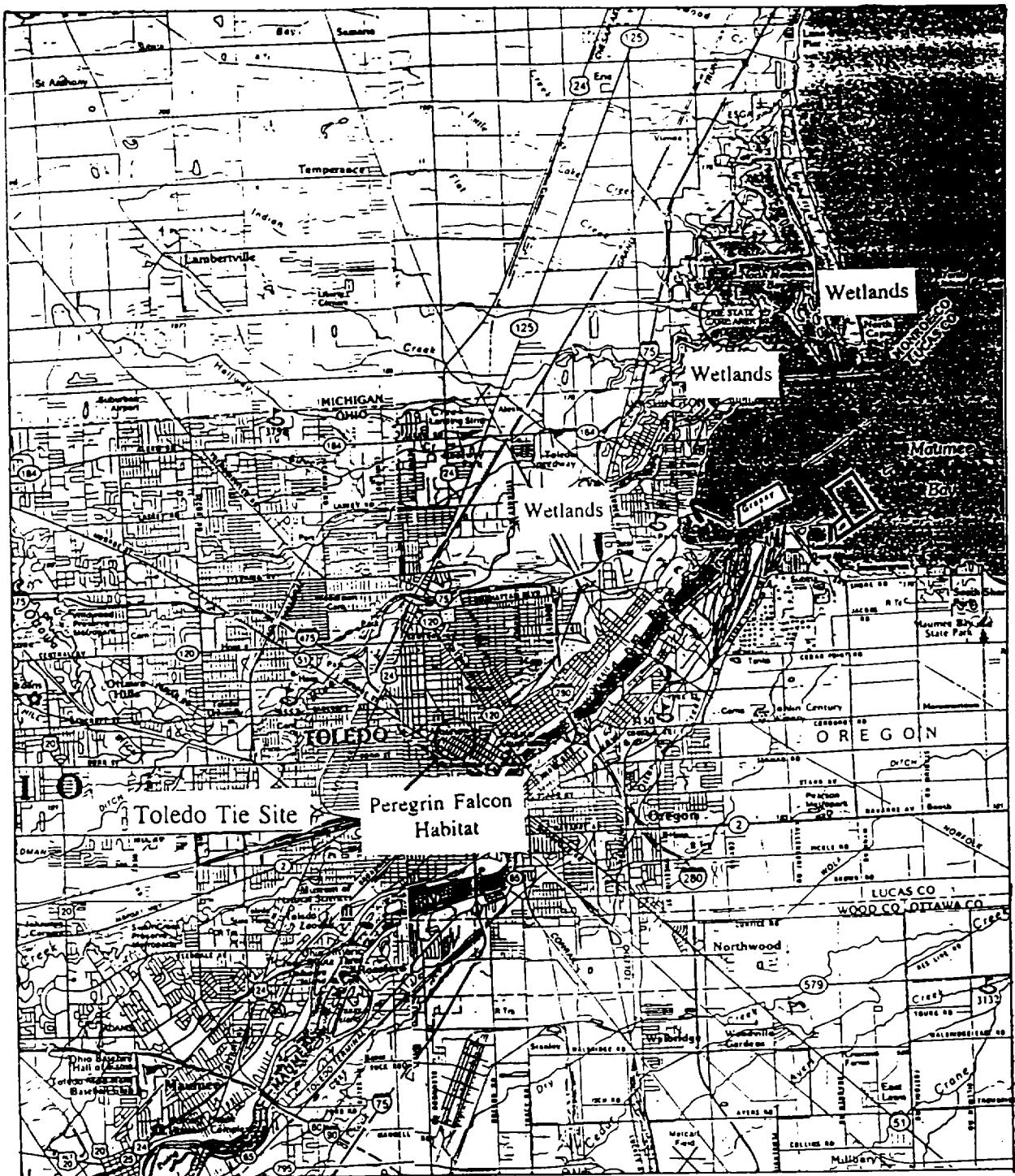


Figure 7
Sensitive Environments Map
(1 inch equals approx. 2.5 miles)

The Ottawa River and North Maumee Bay are areas used for recreation and sportfishing. There are approximately 13 miles of wetland frontage along the banks of the Ottawa River and North Maumee Bay within the 15 mile distance limit. Ohio Water Quality Standards designate these areas as exceptional warmwater habitats; no further degradation is permitted.

6.2 Soil Exposure Pathway

The Toledo Tie site is located in an industrial park, most of which is not fenced. The contaminated Williams Ditch, former creosote lagoon areas, and the waste pile are publicly accessible. OEPA personnel observed stressed vegetation, i.e. dying trees and barren soil, along the railroad tracks south of the site. PAH contamination was detected in soil samples from one to 2 1/2 foot depths in and around the waste pile.

Approximately 75-100 workers are employed at the various businesses that comprise the site. The nearest residence is 1000 feet from a soil-contaminated area at the site; there is no evidence of observed contamination at the residence. There are no terrestrial sensitive environments within 200 feet of the documented areas of contamination.

Semi-volatile organic compounds and heavy metals have been detected in on-site soils at concentrations greater than three times background levels. The areas of greatest contamination are publicly accessible, and are located in a commercial and industrial park.

6.3 Ground Water Pathway

The only groundwater wells located during the investigation were four wells installed in Lot 25 by Midwest Environmental Consultants (MEC) for Greg Archambau of Arco, Incorporated. Mr. Archambau did not allow OEPA personnel to sample the property during the March, 1993 investigation, but did submit a copy of the MEC investigation report. This report indicated arsenic and chromium contamination was present in the groundwater.

The greatest PAH contamination was detected in soil samples at depths greater than two feet in the former creosote disposal areas (lagoons). Groundwater has been encountered as shallow as three feet in these areas; therefore, it is likely the groundwater is saturated with creosote. As previously noted, Williams Ditch sediment, approximately five feet below grade, is heavily contaminated with coal tar residue.

Although the OEPA and Environmental Consultants Incorporated sampling results indicate the potential for groundwater contamination exists, Toledo authorities have prohibited the use of groundwater for public drinking water. Groundwater in this area of northwest, Ohio has a history of contamination from various industries and landfills; therefore, the city of Toledo uses surface water from Lake Erie as a public drinking water source.

6.4 Air Pathway

Currently, on-site contaminated soils are covered with vegetation; therefore, the potential for contaminants to migrate from the site as windblown particulates should be minimized. The waste pile, contaminated with metals, is approximately 15 feet high. A strong wind could cause soil particulates to be released to adjacent areas.

Although OEPA personnel did not initiate a formal air sampling program at the Toledo Tie site, portable air monitoring was conducted. In December, 1988, Doral Steel Company (at that time, owner of the property known as the Ohio Lottery) contracted RFT Environmental & Industrial Hygiene Services to perform air sampling inside the building. Cresol and phenols analyses of four air samples indicate worker exposure to these compounds within the building is non-existent.

Toledo Tie is approximately four miles west of downtown Toledo, an area classified on the federally-designated endangered species list as providing habitat for the peregrin Falcon. Swan Creek is approximately 3/4 mile south of documented source areas at the site. Additionally, the Ottawa and Maumee Rivers are two and 2.5 miles from the site respectively. According to the 1990 Census, the estimated population within a four-mile radius of the site is 173,715. A four-mile radius map can be found in Appendix C.

7.0 REFERENCES

1. Bowser Morner; Soil Exploration, Proposed Doral Steel Company Warehouse Addition. Prepared for Doral Steel Company; May, 1987.
2. Environmental Consultants, Incorporated; Environmental Assessment of the Former Cook United Warehouse Property, 3115 Frenchmans Road. Prepared for Arco, Incorporated; May, 1989.
3. Environmental Consultants, Inc.; Environmental Site Assessment of LBA Custom Printing. Prepared for Kerry Jurica of LBA Custom Printing; February, 1989.
4. Environmental & Industrial Hygiene Services; Air Sampling for Creosote Residue. Prepared for Doral Steel Company; December, 1988.
5. Geraghty & Miller; Investigation of a Soil Pile at 3243 Frenchmans Road. Prepared for Wickes Companies; October, 1990.
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7. Ohio Atlas & Gazatteer; Delorme Mapping Company, 1989.
8. Ohio Department of Transportation, Division of Geological Survey; Toledo, Sylvania, Maumee and Rossford quadrangle maps, 1965.
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10. OEPA; Maumee River Remedial Action Plan Stage I Investigation Report. Prepared by the Maumee River Remedial Action Plan Advisory Committee; October, 1990.
11. OEPA; Preliminary Geologic Evaluation of the Ottawa River Basin portion of the Area of Concern (AOC) for the Maumee Remedial Action Plan (RAP). Prepared by the Division of Drinking & Ground Waters; October, 1993.
12. OEPA; Site Reconnaissance of Toledo Tie Treatment Site. Conducted by the Division of Emergency & Remedial Response; January 28, 1993.
13. Tiger Files Population Data; 1990 Census.
14. United States Fish and Wildlife Service; Federal Listed Threatened and Endangered Species-Ohio; December 12, 1991.

APPENDIX A

Soil Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL28 MESY28	ETL30 MESY30	ETL31 MESY31	ETL34 MESY34			ETL29 MESY29	ETL32 MESY32	ETL33 MESY33
DATE SAMPLE COLLECTED	3/17/93	3/18/93	3/18/93	3/18/93			3/17/93	3/18/93	3/18/93
TIME SAMPLE COLLECTED	1701	1130	1115	415			1830	1200	1200
SAMPLE DEPTH	1'	4.5'-5.5'	1.5'-2.5'	4.5'-5.5'			2'-3'	4'-5'	4'-5'
QA/QC DESCRIPTION (if applicable)	MS/MSD			Background					Dup of ETL32

COMPOUND DETECTED (ug/kg)	LOW					MED				
	CRQL					CRQL				
1,OLATILE ORGANIC COMPOUNDS										
chloromethane	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
bromomethane	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
vinyl chloride	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
chloroethane	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
methylene chloride	10 ug/kg	30BU	14BU	13BU	12BU	1200 ug/kg	1500U	680J	1500U	
acetone	10 ug/kg	13U	27	13U	12U	1200 ug/kg	1500U	1500U	1500U	
carbon disulfide	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
1,1-dichloroethene	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
1,1-dichloroethane	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
1,2-dichloroethene (total)	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
chloroform	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
1,2-dichloroethane	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
2-butanone	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	10000D	2200	7200D	
1,1,1-trichloroethane	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
carbon tetrachloride	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
bromodichloromethane	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
1,2-dichloropropane	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
cis-1,3-dichloropropene	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
trichloroethene	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
dibromochloromethane	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
1,1,2-trichloroethane	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
benzene	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	2400	430J	1000J	
trans-1,3-dichloropropene	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
bromoform	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
4-methyl-2-pentanone	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
2-hexanone	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
tetrachloroethene	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
1,1,2,2-tetrachloroethane	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	1500U	1500U	1500U	
toluene	10 ug/kg	13U	14U	13U	12U	1200 ug/kg	18000	3500	12000	

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Soil Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL28 MESY28	ETL30 MESY30	ETL31 MESY31	ETL34 MESY34			ETL29 MESY29	ETL32 MESY32	ETL33 MESY33
DATE SAMPLE COLLECTED	3/17/93	3/18/93	3/18/93	3/18/93			3/17/93	3/18/93	3/18/93
TIME SAMPLE COLLECTED	1701	1130	1115	415			1830	1200	1200
SAMPLE DEPTH	1'	4.5'-5.5'	1.5'-2.5'	4.5'-5.5'			2'-3'	4'-5'	4'-5'
QA/QC DESCRIPTION (if applicable)	MS/MSD			Background					Dup of ETL32

COMPOUND DETECTED (ug/kg)	LOW					MED				
	VOLATILE ORGANIC COMPOUNDS					CRQL	SEMIVOLATILE ORGANIC COMPOUNDS			
chlorobenzene	10 ug/kg	13U	14U	13U	12U		1200 ug/kg	1500U	1500U	1500U
ethyl benzene	10 ug/kg	13U	14U	13U	12U		1200 ug/kg	1500U	2800	11000
styrene	10 ug/kg	13U	14U	13U	12U		1200 ug/kg	10000	1800	7400
xylenes (total)	10 ug/kg	13U	14U	13U	12U		1200 ug/kg	74000E	20000	93000E

SEMI-VOLATILE ORGANIC COMPOUNDS	LOW					MED				
	VOLATILE ORGANIC COMPOUNDS					CRQL	SEMIVOLATILE ORGANIC COMPOUNDS			
phenol	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
bis(2-chloroethyl)ether	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
2-chlorophenol	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
1,3-dichlorobenzene	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
1,4-dichlorobenzene	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
1,2-dichlorobenzene	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
2-methylphenol	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
2,2-oxibis(1-chloropropane)	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
4-methylphenol	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
n-nitroso-di-n-propylamine	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
hexachloroethane	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
nitrobenzene	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
isophorone	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
2-nitrophenol	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
2,4-dimethylphenol	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
bis(2-chloroethoxy)methane	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
2,4-dichlorophenol	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
1,2,4-trichlorobenzene	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
naphthalene	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	3700000D	2300000D	2500000D
4-chloroaniline	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
hexachlorobutadiene	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
4-chloro-3-methylphenol	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	40000U	41000U	42000U
2-methylnaphthalene	330 ug/kg	21000U	450U	430U	390U		10000 ug/kg	550000E	700000D	760000D

Soil Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL28 MESY28	ETL30 MESY30	ETL31 MESY31	ETL34 MESY34			ETL29 MESY29	ETL32 MESY32	ETL33 MESY33
DATE SAMPLE COLLECTED	3/17/93	3/18/93	3/18/93	3/18/93			3/17/93	3/18/93	3/18/93
TIME SAMPLE COLLECTED	1701	1130	1115	415			1830	1200	1200
SAMPLE DEPTH	1'	4.5'-5.5'	1.5'-2.5'	4.5'-5.5'			2'-3'	4'-5'	4'-5'
QA/QC DESCRIPTION (if applicable)	MS/MSD			Background					Dup of ETL32

COMPOUND DETECTED (ug/kg)	LOW					MED				
	CRQL					CRQL				
SEMI-VOLATILE ORGANIC COMPOUNDS										
hexachlorocyclopentadiene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	40000U	41000U	42000U	
2,4,6-trichlorophenol	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	40000U	41000U	42000U	
2,4,5-trichlorophenol	800 ug/kg	51000U	1100U	1000U	940U	25000 ug/kg	98000U	100000U	100000U	
2-chloronaphthalene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	40000U	41000U	42000U	
2-nitroaniline	800 ug/kg	51000U	1100U	1000U	940U	25000 ug/kg	98000U	100000U	100000U	
dimethylphthalate	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	40000U	41000U	42000U	
acenaphthylene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	100000	110000	130000	
2,6-dinitrotoluene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	40000U	41000U	42000U	
3-nitroaniline	330 ug/kg	51000U	1100U	1000U	940U	25000 ug/kg	98000U	100000U	100000U	
acenaphthene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	370000E	720000D	710000D	
2,4-dinitrophenol	800 ug/kg	51000U	1100U	1000U	940U	25000 ug/kg	98000U	100000U	100000U	
4-nitrophenol	800 ug/kg	51000U	1100U	1000U	940U	25000 ug/kg	98000U	100000U	100000U	
dibenzofuran	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	330000E	560000D	570000D	
2,4-dinitrotoluene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	40000U	41000U	42000U	
diethylphthalate	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	40000U	41000U	42000U	
4-chlorophenyl-phenyl ether	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	40000U	41000U	42000U	
fluorene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	440000E	790000D	770000D	
4-nitroaniline	800 ug/kg	51000U	1100U	1000U	940U	25000 ug/kg	98000U	100000U	100000U	
4,6-dinitro-2-methylphenol	800 ug/kg	51000U	1100U	1000U	940U	25000 ug/kg	98000U	100000U	100000U	
n-nitrosodiphenylamine	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	40000U	41000U	42000U	
4-bromophenyl-phenyl ether	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	40000U	41000U	42000U	
hexachlorobenzene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	40000U	41000U	42000U	
pentachlorophenol	800 ug/kg	51000U	1100U	1000U	940U	25000 ug/kg	98000U	100000U	100000U	
phenanthrene	330 ug/kg	6800J	450U	430U	390U	10000 ug/kg	1400000D	2000000D	2000000D	
anthracene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	310000	250000	200000	
carbazole	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	150000	120000	110000	
di-n-butylphthalate	330 ug/kg	21000U	220J	430U	390U	10000 ug/kg	40000U	41000U	42000U	
fluoranthene	330 ug/kg	45000	450U	89J	390U	10000 ug/kg	480000E	1300000D	1300000D	
pvcene	330 ug/kg	46000	450U	66J	390U	10000 ug/kg	300060	870000D	840000D	

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Soil Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL28 MESY28	ETL30 MESY30	ETL31 MESY31	ETL34 MESY34			ETL29 MESY29	ETL32 MESY32	ETL33 MESY33
DATE SAMPLE COLLECTED	3/17/93	3/18/93	3/18/93	3/18/93			3/17/93	3/18/93	3/18/93
TIME SAMPLE COLLECTED	1701	1130	1115	415			1830	1200	1200
SAMPLE DEPTH	1'	4.5'-5.5'	1.5'-2.5'	4.5'-5.5'			2'-3'	4'-5'	4'-5'
QA/QC DESCRIPTION (if applicable)	MS-MSD			Background					Dup of ETL32

COMPOUND DETECTED (ug/kg)	LOW					MED			
	CRQL					CRQL			
SEMI-VOLATILE ORGANIC COMPOUNDS									
butylbenzylphthalate	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	40000U	41000U	42000U
3,3-dichlorobenzidine	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	40000U	41000U	42000U
benzo(a)anthracene	330 ug/kg	28000	450U	55J	390U	10000 ug/kg	160000	300000	270000
chrysene	330 ug/kg	26000	450U	76J	390U	10000 ug/kg	140000	240000	210000
bis(2-ethylhexyl)phthalate	330 ug/kg	21000U	450BU	430U	46J	10000 ug/kg	40000U	41000U	42000U
di-n-octylphthalate	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	40000U	41000U	42000U
benzo(b)fluoranthene	330 ug/kg	79000	450U	210J	390U	10000 ug/kg	170000	340000E	300000
benzo(k)fluoranthene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	40000U	41000U	42000U
benzo(a)pyrene	330 ug/kg	30000	450U	430U	390U	10000 ug/kg	75000	150000	140000
indeno(1,2,3-cd)pyrene	330 ug/kg	19000J	450U	430U	390U	10000 ug/kg	39000J	90000	86000
dibenzo(a,h)anthracene	330 ug/kg	8700J	450U	430U	390U	10000 ug/kg	20000J	50000	44000
benzo(g,h,i)perylene	330 ug/kg	21000U	450U	430U	390U	10000 ug/kg	40000U	18000J	18000J

PESTICIDES/PCBs	CRQL								
alpha-BHC	1.7 ug/kg	22U	2.3U	2.2U	2.0U			21U	21U
beta-BHC	1.7 ug/kg	22U	2.3U	2.2U	2.0U			21U	21U
delta-BHC	1.7 ug/kg	22U	2.3U	2.2U	2.0U			21U	21U
gamma-BHC (Lindane)	1.7 ug/kg	22U	2.3U	2.2U	2.0U			21U	21U
heptachlor	1.7 ug/kg	22U	2.3U	2.2U	2.0U			21U	21U
aldrin	1.7 ug/kg	22U	2.3U	2.2U	2.0U			21U	21U
heptachlor epoxide	1.7 ug/kg	22U	2.3U	2.2U	2.0U			21U	21U
endosulfan I	1.7 ug/kg	560DP	2.3U	1.1JP	2.0U			210DP	1700D
dieleldrin	3.3 ug/kg	42U	4.5U	4.3U	3.9U			40U	41U
4,4-DDE	3.3 ug/kg	42U	4.5U	0.73JP	3.9U			40U	360
Endrin	3.3 ug/kg	42U	4.5U	4.3U	3.9U			40U	41U
Endosulfan II	3.3 ug/kg	42U	4.5U	4.3U	3.9U			40U	41U
4,4-DDD	3.3 ug/kg	48P	4.5U	2.3J	3.9U			40U	41U
Endosulfan sulfate	3.3 ug/kg	42U	4.5U	4.3U	3.9U			40U	130P
4,4-DDT	3.3 ug/kg	50P	4.5U	3.8J	3.9U			40U	41U

Soil Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL28 MESY28	ETL30 MESY30	ETL31 MESY31	ETL34 MESY34			ETL29 MESY29	ETL32 MESY32	ETL33 MESY33
DATE SAMPLE COLLECTED	3/17/93	3/18/93	3/18/93	3/18/93			3/17/93	3/18/93	3/18/93
TIME SAMPLE COLLECTED	1701	1130	1115	415			1830	1200	1200
SAMPLE DEPTH	1"	4.5'-5.5'	1.5'-2.5'	4.5'-5.5'			2'-3'	4'-5'	4'-5'
QA/QC DESCRIPTION (if applicable)	MS/MSD			Background					Dup of ETL32

COMPOUND DETECTED (ug/kg)										
PESTICIDES/PCBs	CRQL									
methoxychlor	17.0 ug/kg	220U	23U	22U	20U			210U	210U	220U
endrin ketone	3.3 ug/kg	110P	4.5U	4.3U	3.9U			160P	440DP	130P
endrin aldehyde	3.3 ug/kg	42U	4.5U	4.3U	3.9U			40U	41U	42U
alpha-chlordane	1.7 ug/kg	22U	2.3U	2.2U	2.0U			21U	21U	22U
gamma-chlordane	1.7 ug/kg	14J	2.3U	2.2U	2.0U			21U	21U	22U
toxaphene	170 ug/kg	2200U	230U	220U	200U			2100U	2100U	2200U
aroclor-1016	33 ug/kg	420U	45U	43U	39U			400U	410U	420U
aroclor-1221	33 ug/kg	850U	92U	87U	79U			820U	840U	860U
aroclor-1232	67 ug/kg	420U	45U	43U	39U			400U	410U	420U
aroclor-1242	33 ug/kg	420U	45U	43U	39U			400U	410U	420U
aroclor-1248	33 ug/kg	420U	45U	43U	39U			400U	410U	420U
aroclor-1254	33 ug/kg	420U	45U	43U	39U			400U	410U	420U
aroclor-1260	33 ug/kg	420U	45U	43U	39U			400U	410U	420U

TCL COMPOUND QUALIFIERS	DEFINITION
J	Indicates an estimated value
U	Compound was analyzed for but not detected.
B	Compound is found in the associated blank as well as in the sample.
D	This flag indicates all compounds identified in an analysis at a secondary dilution factor.
E	This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument.
P	Indicates there is a greater than 25% difference for detected concentrations between two GC columns. The lower value is reported.

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Soil Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL28 MESY28	ETL30 MESY30	ETL31 MESY31	ETL34 MESY34			ETL29 MESY29	ETL32 MESY32	ETL33 MESY33
DATE SAMPLE COLLECTED	3/17/93	3/18/93	3/18/93	3/18/93			3/17/93	3/18/93	3/18/93
TIME SAMPLE COLLECTED	1701	1130	1115	415			1830	1200	1200
SAMPLE DEPTH	1'	4.5'-5.5'	1.5'-2.5'	4.5'-5.5'			2'-3'	4'-5'	4'-5'
QA/QC DESCRIPTION (if applicable)	MS/MSD			Background					Dup of ETL32

ANALYTE DETECTED (mg/kg)										
TAL METALS/CYANIDE	CRDL									
aluminum	40 mg/kg	5490	3910	5880	5580			3490	5920	7560
antimony	12 mg/kg	11.3B	8U	8.4U	8U			8.1U	8.2U	8.1U
arsenic	2 mg/kg	11.1	0.67B	3.6	2.2B			1.9B	5.1	6.4
barium	40 mg/kg	62.2	38.4B	16.1B	28.7B			17.6B	54.1	58.9
beryllium	1 mg/kg	0.85B	0.27B	0.26U	0.28B			0.25U	0.39B	0.56B
cadmium	1 mg/kg	1U	1U	1.1U	1U			1U	1U	1U
calcium	1000 mg/kg	24100	3050	1710	1390			1130B	34500	40100
chromium	2 mg/kg	9.7	7.2	5.2	10.1			6.2	10.9	13.1
cobalt	10 mg/kg	4.9B	3B	2.3B	4.4B			3.4B	7.5B	8.9B
copper	5 mg/kg	29.1	3.6B	4.1B	8.6			5.9B	14.7	20.5
iron	20 mg/kg	16600	3850	8230	8150			5200	12700	24100
lead	0.6 mg/kg	190	4.5	9	5.2			3.8	11.4	12.1
magnesium	1000 mg/kg	10300	630B	514B	1120B			802B	10900	13000
manganese	3 mg/kg	146	31.9	29.1	121			44.6	255	343
mercury	0.1 mg/kg	0.17	0.13U	0.13U	0.13U			0.13U	0.13U	0.13U
nickel	8 mg/kg	9.8B	6.2B	3.6B	11			6.2B	14.8	15.8
potassium	1000 mg/kg	601B	285B	203B	545B			413B	1050B	1500
selenium	1 mg/kg	0.68B	0.25U	0.46B	0.25U			0.25U	0.44B	0.35B
silver	2 mg/kg	1.3U	1.3U	1.3U	1.3U			1.3U	1.3U	1.3U
sodium	1000 mg/kg	148B	51.1B	44B	54.7B			58.7B	126B	151B
thallium	2 mg/kg	0.34B	0.25U	0.26U	0.31B			0.25U	0.32B	0.28B
vanadium	10 mg/kg	14.5	9.6B	11.6B	13.6			9B	20.1	28.2
zinc	4 mg/kg	123	13.4	20.2	24.4			17.3	93.5	94.3
cyanide	2 mg/kg	0.64U	0.63U	0.66U	0.63U			0.63U	0.64U	0.64U

TAL ANALYTE QUALIFIERS	DEFINITION
B	Value is real, but is above instrument detection limit and below contract-required detection limit.
U	Analyte was analyzed for but not detected.

Sediment Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL41 MESY-41			ETL38 MESY38	ETL39 MESY39	ETL40 MESY-40
DATE SAMPLE COLLECTED	3/17/93			3/17/93	3/17/93	3/17/93
TIME SAMPLE COLLECTED	1500			1030	1225	1225
SAMPLE DEPTH	0"-4"			0"-4"	0"-4"	0"-4"
QA/QC DESCRIPTION (if applicable)	Background			NS/MSD		Dup of ETL 19

COMPOUND DETECTED (ug/kg)	LOW			MED		
	CKQL	CRQL	CRQL	CRQL	CRQL	CRQL
VOLATILE ORGANIC COMPOUNDS						
chloromethane	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
bromomethane	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
vinyl chloride	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
chloroethane	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
methylene chloride	10 ug/kg	22BU	1200 ug/kg	6700U	3000U	2800U
acetone	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
carbon disulfide	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
1,1-dichloroethene	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
1,1-dichloroethane	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
1,2-dichloroethene (total)	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
chloroform	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
1,2-dichloroethane	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
2-butanone	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
1,1,1-trichloroethane	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
carbon tetrachloride	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
bromodichloromethane	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
1,2-dichloropropane	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
cis-1,3-dichloropropene	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
trichloroethene	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
dibromochloromethane	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
1,1,2-trichloroethane	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
benzene	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
trans-1,3-dichloropropene	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
bromoform	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
4-methyl-2-pentanone	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
2-hexanone	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
tetrachloroethene	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
1,1,2,2-tetrachloroethane	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U
toluene	10 ug/kg	14U	1200 ug/kg	6700U	3000U	2800U

Sediment Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL41 MESY41			ETL38 MESY38	ETL39 MESY39	ETL40 MESY40
DATE SAMPLE COLLECTED	3/17/93			3/17/93	3/17/93	3/17/93
TIME SAMPLE COLLECTED	1500			1030	1225	1225
SAMPLE DEPTH	0"-4"			0"-4"	0"-4"	0"-4"
QA/QC DESCRIPTION (if applicable)	Background			NIS/MISD		Dup of ETL39

COMPOUND DETECTED (ug/kg)	LOW			MED		
	VOLATILE ORGANIC COMPOUNDS	CRQL		CRQL		
chlorobenzene	10 ug/kg	14U		1200 ug/kg	6700U	3000U
ethyl benzene	10 ug/kg	14U		1200 ug/kg	6700U	3000U
styrene	10 ug/kg	14U		1200 ug/kg	6700U	3000U
xylenes (total)	10 ug/kg	14U		1200 ug/kg	6700U	3000U
<hr/>						
SEMI-VOLATILE ORGANIC COMPOUNDS	CRQL		CRQL			
	phenol	330 ug/kg	480U	10000 ug/kg	170000U	24000U
bis(2-chloroethyl)ether	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
2-chlorophenol	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
1,3-dichlorobenzene	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
1,4-dichlorobenzene	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
1,2-dichlorobenzene	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
2-methylphenol	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
2,2-oxibis(1-chloropropane)	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
4-methylphenol	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
n-nitroso-di-n-propylamine	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
hexachloroethane	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
nitrobenzene	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
isophorone	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
2-nitrophenol	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
2,4-dimethylphenol	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
bis(2-chloroethoxy)methane	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
2,4-dichlorophenol	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
1,2,4-trichlorobenzene	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
naphthalene	330 ug/kg	480U	10000 ug/kg	69000J	24000U	23000U
4-chloroaniline	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
hexachlorobutadiene	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
4-chloro-3-methylphenol	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
2-methylnaphthalene	330 ug/kg	480U	10000 ug/kg	4000J	24000U	23000U

Sediment Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL41 MESY41			ETL38 MESY38	ETL39 MESY39	ETL40 MESY40
DATE SAMPLE COLLECTED	3/17/93			3/17/93	3/17/93	3/17/93
TIME SAMPLE COLLECTED	1500			1030	1225	1225
SAMPLE DEPTH	0"-4"			0"-4"	0"-4"	0"-4"
QA/QC DESCRIPTION (if applicable)	Background			NIS/MSD		Dup of ETL39

COMPOUND DETECTED (ug/kg)	LOW		MED			
	CRQL		CRQL			
SEMI-VOLATILE ORGANIC COMPOUNDS						
hexachlorocyclopentadiene	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
2,4,6-trichlorophenol	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
2,4,5-trichlorophenol	800 ug/kg	1200U	25000 ug/kg	420000U	60000U	58000U
2-chloronaphthalene	330 ug/kg	480U	10000 ug/kg	170000U	20000U	23000U
2-nitroaniline	800 ug/kg	1200U	25000 ug/kg	420000U	60000U	58000U
dimethylphthalate	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
acenaphthylene	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
2,6-dinitrotoluene	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
3-nitroaniline	330 ug/kg	1200U	25000 ug/kg	420000U	60000U	58000U
acenaphthene	330 ug/kg	480U	10000 ug/kg	85000J	24000U	23000U
2,4-dinitrophenol	800 ug/kg	1200U	25000 ug/kg	420000U	60000U	58000U
4-nitrophenol	800 ug/kg	1200U	25000 ug/kg	420000U	60000U	58000U
dibenzofuran	330 ug/kg	480U	10000 ug/kg	75000U	24000U	23000U
2,4-dinitrotoluene	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
diethylphthalate	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
4-chlorophenyl-phenyl ether	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
fluorene	330 ug/kg	480U	10000 ug/kg	130000J	24000U	23000U
4-nitroaniline	800 ug/kg	1200U	25000 ug/kg	420000U	60000U	58000U
4,6-dinitro-2-methylphenol	800 ug/kg	1200U	25000 ug/kg	420000U	60000U	58000U
n-nitrosodiphenylamine	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
4-bromophenyl-phenyl ether	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
hexachlorobenzene	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
pentachlorophenol	800 ug/kg	1200U	25000 ug/kg	420000U	60000U	58000U
phenanthrene	330 ug/kg	71J	10000 ug/kg	600000	4000J	4000J
anthracene	330 ug/kg	480U	10000 ug/kg	51000J	24000U	23000U
carbazole	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
di-n-butylphthalate	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
fluoranthene	330 ug/kg	190J	10000 ug/kg	720000	11000J	11000J
pyrene	330 ug/kg	170J	10000 m	500000	11000J	9500J

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Sediment Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL41 MESY41			ETL38 MESY38	ETL39 MESY39	ETL40 MESY40
DATE SAMPLE COLLECTED	3/17/93			3/17/93	3/17/93	3/17/93
TIME SAMPLE COLLECTED	1500			1030	1225	1225
SAMPLE DEPTH	0"-4"			0"-4"	0"-4"	0"-4"
QA/QC DESCRIPTION (if applicable)	Background			NIS/ISD		Dup of ETL39

COMPOUND DETECTED (ug/kg)	LOW		MED			
	CRQL		CRQL			
SEMI-VOLATILE ORGANIC COMPOUNDS						
butylbenzylphthalate	330 ug/kg	60J	10000 ug/kg	170000U	11000BJU	2300BJU
3,3-dichlorobenzidine	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
benzo(a)anthracene	330 ug/kg	92J	10000 ug/kg	160000J	4000J	3500J
chrysene	330 ug/kg	110J	10000 ug/kg	180000	4100J	4600J
bis(2-ethylhexyl)phthalate	330 ug/kg	50J	10000 ug/kg	170000U	4600J	3500J
di-n-octylphthalate	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
benzo(b)fluoranthene	330 ug/kg	190JX	10000 ug/kg	230000X	8000JX	5700J
benzo(k)fluoranthene	330 ug/kg	190JX	10000 ug/kg	230000X	8000JX	23000U
benzo(a)pyrene	330 ug/kg	84J	10000 ug/kg	110000J	3000J	3000J
indeno(1,2,3-cd)pyrene	330 ug/kg	480U	10000 ug/kg	27000J	24000U	23000U
dibenzo(a,h)anthracene	330 ug/kg	480U	10000 ug/kg	170000U	24000U	23000U
benzo(g,h,i)perylene	330 ug/kg	480U	10000 ug/kg	25000J	24000U	23000U

PESTICIDES/PCBs	CRQL					
alpha-BHC	1.7 ug/kg	2.4U		0.88JP	1.3JP	3.9U
beta-BHC	1.7 ug/kg	2.4U		5.9JP	1.6JP	3.9U
delta-BHC	1.7 ug/kg	1.7JP		9.4U	0.76JP	11P
gamma-BHC (Lindane)	1.7 ug/kg	2.4U		9.4U	4U	3.9U
heptachlor	1.7 ug/kg	0.17JP		9.4U	4U	3.9U
aldrin	1.7 ug/kg	0.72JP		10P	4.6P	4.1P
heptachlor epoxide	1.7 ug/kg	2.4U		7.5JP	4U	3.9U
endosulfan I	1.7 ug/kg	2.4U		9.4U	4U	3.9U
dicofol	3.3 ug/kg	8.3		92P	25P	25P
4,4-DDE	3.3 ug/kg	140CD		290P	260D	190PCE
Endrin	3.3 ug/kg	3.5JP		18U	8.1P	8.9P
Endosulfan II	3.3 ug/kg	4.7U		18U	7.8U	7.6U
4,4-DDD	3.3 ug/kg	93CD		18U	310PD	270PEC
Endosulfan sulfate	3.3 ug/kg	0.91JP		18U	7.8U	7.6U
4,4-DDT	3.3 ug/kg	130CD		120P	83	94

Sediment Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL41 MESY41			ETL38 MESY38	ETL39 MESY39	ETL40 MESY40
DATE SAMPLE COLLECTED	3/17/93			3/17/93	3/17/93	3/17/93
TIME SAMPLE COLLECTED	1500			1030	1225	1225
SAMPLE DEPTH	0"-4"			0"-4"	0"-4"	0"-4"
QA/QC DESCRIPTION (if applicable)	Background			MS/MSD		Dup of ETL39

COMPOUND DETECTED (ug/kg)							
PESTICIDES/PCBs	CRQ:	ETL41	ETL38	ETL39	ETL40		
methoxychlor	17 ug/kg	24U		94U	40U	39U	
endrin ketone	3.3 ug/kg	4.7U		18U	7.8U	7.6U	
endrin aldehyde	3.3 ug/kg	5.9P		220P	27P	21P	
alpha-chlordane	1.7 ug/kg	4.5P		11P	19JD	13P	
gamma-chlordane	1.7 ug/kg	6JPD		9.4U	46D	12	
toxaphene	170 ug/kg	240U		940U	400U	390U	
aroclor-1016	33 ug/kg	47U		180U	78U	76U	
aroclor-1221	33 ug/kg	96U		370U	160U	160U	
aroclor-1232	67 ug/kg	47U		180U	78U	76U	
aroclor-1242	33 ug/kg	47U		180U	78U	76U	
aroclor-1248	33 ug/kg	47U		180U	78U	76U	
aroclor-1254	33 ug/kg	47U		180U	78U	76U	
aroclor-1260	33 ug/kg	47U		180U	78U	76U	

TCL COMPOUND QUALIFIERS	DEFINITION
J	Indicates an estimated value
U	Compound was analyzed for but not detected.
B	Compound is found in the associated blank as well as in the sample.
D	This flag indicates all compounds identified in an analysis at a secondary dilution factor.
E	This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument.
P	Indicates there is a greater than 25% difference for detected concentrations between two GC columns.

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Sediment Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL41 MESY41			ETL38 MESY38	ETL39 MESY39	ETL40 MESY40
DATE SAMPLE COLLECTED	3/17/93			3/17/93	3/17/93	3/17/93
TIME SAMPLE COLLECTED	1500			1030	1225	1225
SAMPLE DEPTH	0"-4"			0"-4"	0"-4"	0"-4"
QA/QC DESCRIPTION (if applicable)	Background			NIS/MSD		Dup of ETL39

ANALYTE DETECTED (mg/kg)						
TAL METALS/CYANIDE	CRDL					
aluminum	40 mg/kg	2710		18400	8450	8530
antimony	12 mg/kg	4.9U		20.6U	9.3U	6.8U
arsenic	2 mg/kg	2.1B		19.3	29.9	15.9
barium	40 mg/kg	25B		264	143	152
beryllium	1 mg/kg	0.17B		1B	0.61B	0.52B
cadmium	1 mg/kg	1U		4.4U	3.1	2.9
calcium	1000 mg/kg	3110		85600	60100	61400
chromium	2 mg/kg	5.3		51.5	23.9	26.2
cobalt	10 mg/kg	1.6B		27.2B	5.1B	6B
copper	5 mg/kg	6.7		90.3	69.3	70.7
iron	20 mg/kg	4120		31600	18200	18000
lead	0.6 mg/kg	7.6		149	185	210
magnesium	1000 mg/kg	1170B		27400	25100	25500
manganese	3 mg/kg	71.6		1550	453	464
mercury	0.1 mg/kg	0.05U		0.22U	0.09U	0.08U
nickel	8 mg/kg	4U		33B	17.9B	12.8B
potassium	1000 mg/kg	174U		1400B	587B	617B
selenium	1 mg/kg	0.3U		1.8BM	0.9B	0.84B
silver	2 mg/kg	0.86U		3.6U	1.6U	1.2U
sodium	1000 mg/kg	36.3B		1650B	5880	5870
thallium	2 mg/kg	0.37U		1.5U	0.63U	0.68U
vanadium	10 mg/kg	8.8B		48.2B	22.7	23.1
zinc	4 mg/kg	21.4		701	410	420
cyanide	2 mg/kg	0.68U		2.7U	1.2U	1.2U

TAL ANALYTE QUALIFIERS	DEFINITION
B	Value is real, but is above instrument detection limit and below contract-required detection limit
U	Analyte was analyzed for but not detected.

Surface Water Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL43 MESY43	ETL44 MESY44	ETL45 MESY45	ETL46 MESY46	ETL51
DATE SAMPLE COLLECTED	3/17/93	3/17/93	3/17/93	3/17/93	3/17/93
TIME SAMPLE COLLECTED	935	1200	1200	1510	800
SAMPLE DEPTH					
QA/QC DESCRIPTION (if applicable)	MS/MSD		Dup of ETL44	Background	Trip Blank

COMPOUND DETECTED (ug/l)	CRQL	ETL43 MESY43	ETL44 MESY44	ETL45 MESY45	ETL46 MESY46	ETL51
VOLATILE ORGANIC COMPOUNDS						
chloroethane	10 ug/l	10U	10U	10U	10U	10U
bromomethane	10 ug/l	10U	10U	10U	10U	10U
vinyl chloride	10 ug/l	10U	10U	10U	10U	10U
chloroethane	10 ug/l	10U	10U	10U	10U	10U
methylene chloride	10 ug/l	10U	10U	10U	10U	10U
acetone	10 ug/l	11	10U	10U	10U	10U
carbon disulfide	10 ug/l	10U	10U	10U	10U	10U
1,1-dichloroethene	10 ug/l	10U	10U	10U	10U	10U
1,1-dichloroethane	10 ug/l	10U	10U	10U	10U	10U
1,2-dichloroethene (total)	10 ug/l	10U	10U	10U	10U	10U
chloroform	10 ug/l	10U	10U	10U	10U	10U
1,2-dichloroethane	10 ug/l	10U	10U	10U	10U	10U
2-butanone	10 ug/l	10U	10U	10U	10U	10U
1,1,1-trichloroethane	10 ug/l	10U	10U	10U	10U	10U
carbon tetrachloride	10 ug/l	10U	10U	10U	10U	10U
bromodichloromethane	10 ug/l	10U	10U	10U	10U	10U
1,2-dichloropropane	10 ug/l	10U	10U	10U	10U	10U
cis-1,3-dichloropropene	10 ug/l	10U	10U	10U	10U	10U
trichloroethene	10 ug/l	10U	10U	10U	10U	10U
dibromochloromethane	10 ug/l	10U	10U	10U	10U	10U
1,1,2-trichloroethane	10 ug/l	10U	10U	10U	10U	10U
benzene	10 ug/l	6J	10U	10U	10U	10U
trans-1,3-dichloropropene	10 ug/l	10U	10U	10U	10U	10U
bromoform	10 ug/l	10U	10U	10U	10U	10U
4-methyl-2-pentanone	10 ug/l	10U	10U	10U	10U	10U
2-hexanone	10 ug/l	10U	10U	10U	10U	10U
tetrachloroethene	10 ug/l	2J	10U	10U	10U	10U
1,1,2,2-tetrachloroethane	10 ug/l	10U	10U	10U	10U	10U
toluene	10 ug/l	6J	10U	10U	10U	10U

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Surface Water Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL43 MESY43	ETL44 MESY44	ETL45 MESY45	ETL46 MESY46	ETL51
DATE SAMPLE COLLECTED	3/17/93	3/17/93	3/17/93	3/17/93	3/17/93
TIME SAMPLE COLLECTED	935	1200	1200	1510	800
SAMPLE DEPTH					
QA/QC DESCRIPTION (if applicable)	NIS/MSD		Dup of ETL44	Background	Trip Blank

COMPOUND DETECTED (ug/l)						
VOLATILE ORGANIC COMPOUNDS	CRQL	10U	10U	10U	10U	10U
chlorobenzene	10 ug/l	10U	10U	10U	10U	10U
ethyl benzene	10 ug/l	10U	10U	10U	10U	10U
styrene	10 ug/l	10U	10U	10U	10U	10U
xylenes (total)	10 ug/l	4J	10U	10U	10U	10U
SEMI-VOLATILE ORGANIC COMPOUNDS	CRQL	10U	10U	10U	10U	N/A
phenol	10 ug/l	10U	10U	10U	10U	N/A
bis(2-chloroethyl)ether	10 ug/l	10U	10U	10U	10U	N/A
2-chlorophenol	10 ug/l	10U	10U	10U	10U	N/A
1,3-dichlorobenzene	10 ug/l	10U	10U	10U	10U	N/A
1,4-dichlorobenzene	10 ug/l	10U	10U	10U	10U	N/A
1,2-dichlorobenzene	10 ug/l	10U	10U	10U	10U	N/A
2-methylphenol	10 ug/l	10U	10U	10U	10U	N/A
2,2-oxybis(1-chloropropane)	10 ug/l	10U	10U	10U	10U	N/A
4-methylphenol	10 ug/l	10U	10U	10U	10U	N/A
n-nitroso-di-n-propylamine	10 ug/l	10U	10U	10U	10U	N/A
hexachloroethane	10 ug/l	10U	10U	10U	10U	N/A
nitrobenzene	10 ug/l	10U	10U	10U	10U	N/A
isophorone	10 ug/l	10U	10U	10U	10U	N/A
2-nitrophenol	10 ug/l	10U	10U	10U	10U	N/A
2,4-dimethylphenol	10 ug/l	10U	10U	10U	10U	N/A
bis(2-chloroethoxy)methane	10 ug/l	10U	10U	10U	10U	N/A
2,4-dichlorophenol	10 ug/l	10U	10U	10U	10U	N/A
1,2,4-trichlorobenzene	10 ug/l	10U	10U	10U	10U	N/A
naphthalene	10 ug/l	10U	10U	10U	10U	N/A
4-chloroaniline	10 ug/l	10U	10U	10U	10U	N/A
hexachlorobutadiene	10 ug/l	10U	10U	10U	10U	N/A
4-chloro-3-methylphenol	10 ug/l	10U	10U	10U	10U	N/A
2-methylnaphthalene	10 ug/l	10U	10U	10U	10U	N/A

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Surface Water Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL43 MESY43	ETL44 MESY44	ETL45 MESY45	ETL46 MESY46	ETL51
DATE SAMPLE COLLECTED	3/17/93	3/17/93	3/17/93	3/17/93	3/17/93
TIME SAMPLE COLLECTED	935	1200	1200	1510	800
SAMPLE DEPTH					
QA/QC DESCRIPTION (if applicable)	NIS/MSD		Dup of ETL44	Background	Trip Blank

COMPOUND DETECTED (ug/l)						
PESTICIDES/PCBs	CRQL	0.5U	0.5U	0.5U	0.5U	N/A
methoxychlor	0.05 ug/l	0.5U	0.5U	0.5U	0.5U	N/A
endrin ketone	0.1 ug/l	0.1U	0.1U	0.1U	0.1U	N/A
endrin aldehyde	0.1 ug/l	0.1U	0.1U	0.1U	0.1U	N/A
alpha-chlordane	0.05 ug/l	0.05U	0.05U	0.05U	0.05U	N/A
gamma-chlordane	0.05 ug/l	0.05U	0.05U	0.05U	0.05U	N/A
toxaphene	5 ug/l	5U	5U	5U	5U	N/A
aroclor-1016	1 ug/l	1U	1U	1U	1U	N/A
aroclor-1221	1 ug/l	2U	2U	2U	2U	N/A
aroclor-1232	2 ug/l	1U	1U	1U	1U	N/A
aroclor-1242	1 ug/l	1U	1U	1U	1U	N/A
aroclor-1248	1 ug/l	1U	1U	1U	1U	N/A
aroclor-1254	1 ug/l	1U	1U	1U	1U	N/A
aroclor-1260	1 ug/l	1U	1U	1U	1U	N/A

TCL COMPOUND QUALIFIERS	DEFINITION
J	Indicates an estimated value
U	Compound was analyzed for but not detected.
B	Compound is found in the associated blank as well as in the sample.
D	This flag indicates all compounds identified in an analysis at a secondary dilution factor.
E	This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument.
P	Indicates there is a greater than 25% difference for detected concentrations between two GC columns

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Surface Water Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL43 MESY43	ETL44 MESY44	ETL45 MESY45	ETL46 MESY46	ETL51
DATE SAMPLE COLLECTED	3/17/93	3/17/93	3/17/93	3/17/93	3/17/93
TIME SAMPLE COLLECTED	935	1200	1200	1510	800
SAMPLE DEPTH					
QA/QC DESCRIPTION (if applicable)	MS/MSD		Dup of ETL44	Background	Trip Blank

COMPOUND DETECTED (ug/l)						
SEMI-VOLATILE ORGANIC COMPOUNDS	CRQL	ETL43 MESY43	ETL44 MESY44	ETL45 MESY45	ETL46 MESY46	ETL51
hexachlorocyclopentadiene	10 ug/l	10U	10U	10U	10U	N/A
2,4,6-trichlorophenol	10 ug/l	10U	10U	10U	10U	N/A
2,4,5-trichlorophenol	25 ug/l	25U	25U	25U	25U	N/A
2-chloronaphthalene	10 ug/l	10U	10U	10U	10U	N/A
2-nitroaniline	25 ug/l	25U	25U	25U	25U	N/A
dimethylphthalate	10 ug/l	10U	10U	10U	10U	N/A
acenaphthylene	10 ug/l	10U	10U	10U	10U	N/A
2,6-dinitrotoluene	10 ug/l	10U	10U	10U	10U	N/A
3-nitroaniline	25 ug/l	25U	25U	25U	25U	N/A
acenaphthene	10 ug/l	10U	10U	10U	10U	N/A
2,4-dinitrophenol	25 ug/l	25U	25U	25U	25U	N/A
4-nitrophenol	25 ug/l	25U	25U	25U	25U	N/A
dibenzofuran	10 ug/l	10U	10U	10U	10U	N/A
2,4-dinitrotoluene	10 ug/l	10U	10U	10U	10U	N/A
diethylphthalate	10 ug/l	10U	10U	10U	10U	N/A
4-chlorophenyl-phenyl ether	10 ug/l	10U	10U	10U	10U	N/A
fluorene	10 ug/l	10U	10U	10U	10U	N/A
4-nitroaniline	25 ug/l	25U	25U	25U	25U	N/A
4,6-dinitro-2-methylphenol	25 ug/l	25U	25U	25U	25U	N/A
n-nitrosodiphenylamine	10 ug/l	10U	10U	10U	10U	N/A
4-bromophenyl-phenyl ether	10 ug/l	10U	10U	10U	10U	N/A
hexachlorobenzene	10 ug/l	10U	10U	10U	10U	N/A
pentachlorophenol	25 ug/l	25U	25U	25U	25U	N/A
phenanthrene	10 ug/l	10U	10U	10U	10U	N/A
anthracene	10 ug/l	10U	10U	10U	10U	N/A
carbazole	10 ug/l	10U	10U	10U	10U	N/A
di-n-butylphthalate	10 ug/l	10U	10U	10U	10U	N/A
fluoranthene	10 ug/l	10U	10U	10U	10U	N/A
pyrene	10 ug/l	10U	10U	10U	10U	N/A

Surface Water Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL43 MESY43	ETL44 MESY44	ETL45 MESY45	ETL46 MESY46	ETL51
DATE SAMPLE COLLECTED	3/17/93	3/17/93	3/17/93	3/17/93	3/17/93
TIME SAMPLE COLLECTED	935	1200	1200	1510	800
SAMPLE DEPTH					
QA/QC DESCRIPTION (if applicable)	NIS/NISD		Dup of ETL44	Background	Trip Blank

COMPOUND DETECTED (ug/l)						
SEMI-VOLATILE ORGANIC COMPOUNDS	CRL	ETL43 MESY43	ETL44 MESY44	ETL45 MESY45	ETL46 MESY46	ETL51
butylbenzylphthalate	10 ug/l	10U	10U	10U	10U	N/A
3,3-dichlorobenzidine	10 ug/l	10U	10U	10U	10U	N/A
benzo(a)anthracene	10 ug/l	10U	10U	10U	10U	N/A
chlorcene	10 ug/l	10U	10U	10U	10U	N/A
bis(2-ethylhexyl)phthalate	10 ug/l	10U	10U	10U	10U	N/A
di-n-octylphthalate	10 ug/l	10U	10U	10U	10U	N/A
benzo(b)fluoranthene	10 ug/l	10U	10U	10U	10U	N/A
benzo(k)fluoranthene	10 ug/l	10U	10U	10U	10U	N/A
benzo(a)pyrene	10 ug/l	10U	10U	10U	10U	N/A
indeno(1,2,3-cd)pyrene	10 ug/l	10U	10U	10U	10U	N/A
dibenzo(a,h)anthracene	10 ug/l	10U	10U	10U	10U	N/A
benzo(g,h,i)perylene	10 ug/l	10U	10U	10U	10U	N/A
PESTICIDES/PCBs						
PESTICIDES/PCBs	CRL	ETL43 MESY43	ETL44 MESY44	ETL45 MESY45	ETL46 MESY46	ETL51
alpha-BHC	0.05 ug/l	0.05U	0.05U	0.05U	0.05U	N/A
beta-BHC	0.05 ug/l	0.05U	0.05U	0.05U	0.05U	N/A
delta-BHC	0.05 ug/l	0.05U	0.05U	0.05U	0.05U	N/A
gamma-BHC (Lindane)	0.05 ug/l	0.05U	0.05U	0.05U	0.05U	N/A
heptachlor	0.05 ug/l	0.05U	0.05U	0.05U	0.05U	N/A
aldrin	0.05 ug/l	0.05U	0.05U	0.05U	0.05U	N/A
heptachlor epoxide	0.05 ug/l	0.05U	0.05U	0.05U	0.05U	N/A
endosulfan I	0.05 ug/l	0.065P	0.05U	0.05U	0.05U	N/A
dieldrin	0.1 ug/l	0.1U	0.1U	0.1U	0.1U	N/A
4,4-DDE	0.1 ug/l	0.1U	0.1U	0.1U	0.1U	N/A
Endrin	0.1 ug/l	0.1U	0.1U	0.1U	0.1U	N/A
Endosulfan II	0.1 ug/l	0.1U	0.1U	0.1U	0.1U	N/A
4,4-DDD	0.1 ug/l	0.1U	0.1U	0.1U	0.1U	N/A
Endosulfan sulfate	0.1 ug/l	0.1U	0.1U	0.1U	0.1U	N/A
4,4-DDT	0.1 ug/l	0.1U	0.1U	0.1U	0.1U	N/A

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Surface Water Sampling Results

CLP SAMPLE NUMBER (ETL=organics, MESY=inorganics)	ETL43 MESY43	ETL44 MESY44	ETL45 MESY45	ETL46 MESY46	ETL51
DATE SAMPLE COLLECTED	3/17/93	3/17/93	3/17/93	3/17/93	3/17/93
TIME SAMPLE COLLECTED	935	1200	1200	1510	800
SAMPLE DEPTH					
QA/QC DESCRIPTION (if applicable)	N/A/NISD		Dup of ETL43	Background	Trip Blank

ANALYTE DETECTED (ug/l)						
TAL METALS/CYANIDE	CRDL					
aluminum	40 ug/l	1700	315	276	1030	N/A
antimony	12 ug/l	32U	32U	32U	32U	N/A
arsenic	2 ug/l	2.5B	1.3B	1.3B	1.4B	N/A
barium	40 ug/l	60B	36.5B	36.5B	23.5B	N/A
beryllium	1 ug/l	1U	1U	1U	1U	N/A
cadmium	1 ug/l	4U	4U	4U	4U	N/A
calcium	1000 ng/l	54500	65000	64400	30400	N/A
chromium	2 ug/l	8.4B	6U	6U	6U	N/A
cobalt	10 ug/l	8.2B	6U	6U	6U	N/A
copper	5 ug	14B	14.4B	6.9B	5.2B	N/A
iron	20 ug/l	3270	884	811	1150	N/A
lead	0.6 ug/l	20.3	4	3.9	3.6	N/A
magnesium	1000 ug/l	12600	13100	12900	6420	N/A
manganese	3 ug/l	247	194	190	29.4	N/A
mercury	0.1 ug/l	0.2U	0.2U	0.2U	0.2U	N/A
nickel	8 ug/l	14B	12U	12U	12U	N/A
potassium	1000 ng/l	3010B	2580B	2360B	2650B	N/A
selenium	1 ug/l	1.1B	1.1B	1U	1U	N/A
silver	2 ug/l	5U	5U	5U	5U	N/A
sodium	1000 mg/l	198000	93500	94600	4790B	N/A
thallium	2 ug/l	2.3B	1U	1U	1U	N/A
vanadium	10 ug/l	6.9B	5U	5U	5U	N/A
zinc	4 ug/l	93	31.4	29.1	13.9B	N/A
cyanide	2 ug/l	10U	10U	10U	10U	N/A

TAL ANALYTE QUALIFIERS	DEFINITION
B	Value is real, but is above instrument detection limit and below CRDL.
U	Analyte was analyzed for but not detected.

APPENDIX B



1. Sample #ETL43, MESY43 Williams Ditch surf wtr
3. Sample #ETL44, MESY44 & ETL45, MESY45 (duplicate)



2. Sample #ETL38, MESY38 Williams Ditch sediment
4. Sample #ETL39, MESY39 & ETL40, MESY40 (duplicate)





5. Sample #ETL41, MESY41 Background sediment
7. Sample ETL28, MESY28 Waste Pile



6. Sample #ETL46, MESY46 Background surf water
8. Sample 3ETL29, MESY29 Former Lagoon Area

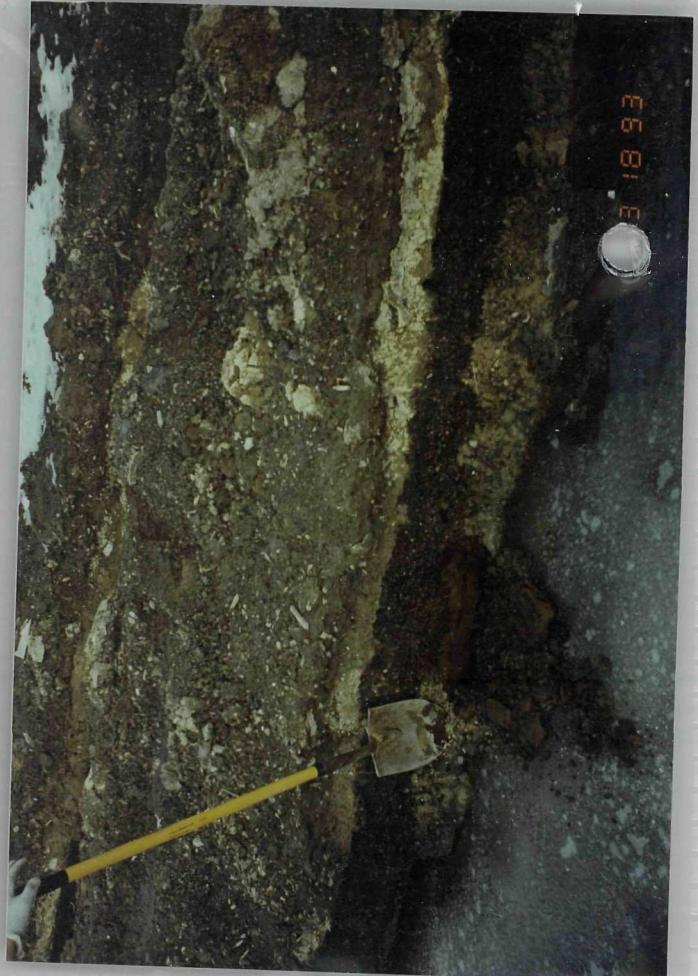




-9. Sample #L29, MESY29 Former Lagoon Area
11. Sample #ETL32, MESY32 & ETL33, MEST33 (duplicate)

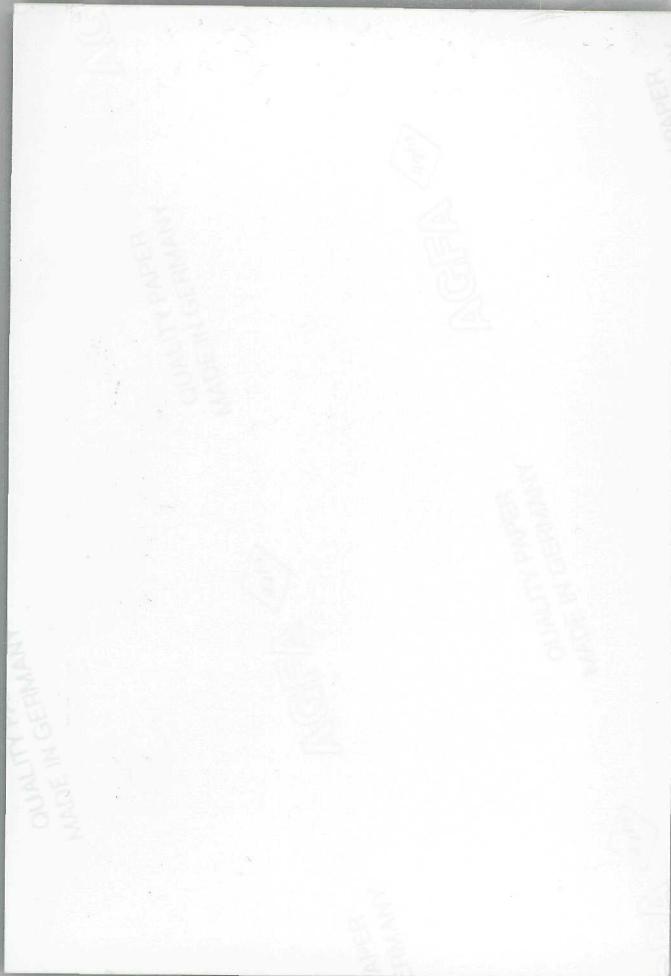


10. Sample ETL30, MESY30 Parks & Forestry
12. Stratigraphy in ditch at Parks & Forestry





13. Sample #ETL34, MESY34 Background soil



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